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**THE FACTORS
OF
SOCIAL EVOLUTION**

THE FACTORS OF SOCIAL EVOLUTION

BY
THEODORE DE LAGUNA

BRYN MAWR COLLEGE

F. S. CROFTS & CO.

NEW YORK - - - - 1926

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MANUFACTURED IN THE UNITED STATES OF AMERICA
BY THE VAIL-BALLOU PRESS, INC., BINGHAMTON, N. Y.

PREFACE

The work which is here offered to the public is a discussion of one of the major problems of sociology. It represents an attempt at what has lately been called "scientific synthesis." The materials and the considerations which it brings together extend far beyond the limits of any special discipline, as well as beyond the limits of any man's expert competence. It is not necessary to confess the hazards, or to insist upon the importance, of studies of this character. Ours is an age of specialists, and we are severe upon the errors of one who lets his speculations range outside his proper field. But there are dangers also in the narrower view of things; and in the broader view there is always the possibility that an observation in one direction may compensate for confused perception in another, and reason to hope that the larger contours may stand out with a new clearness.

The most obvious feature of the present work is, I suppose, the fact that the illustrative material is to a somewhat disproportionate extent drawn from the higher, rather than the lower, levels of culture—from England and Italy rather than Central Africa or the hill-country of Ceylon. Many of the examples are chosen from the history of science and the history of English literature. Even where it has been necessary to treat specifically of characteristics of primitive society, I have preferred to study them as far as possible in the familiar survivals which they have left in the midst of our civilization. There is a reason for this in accidents of the writer's own upbringing; but certain positive advan-

tages may also be claimed for it. Social change is a subject in which all educated men of our time have an interest, and about which they possess a good deal of information, if only of a very unsystematic kind. It has seemed to me that a serious discussion of one of the important phases of this subject would be welcomed, if unnecessary technicalities were avoided, and if, besides, the material were drawn from fields which are tolerably familiar to most readers. We miss, to be sure, the advantage which attaches to the study of relatively simple phenomena. But there is this special compensation: that social changes are, as a rule, comparatively rapid in the more highly civilized peoples. Movements of great magnitude fall well within the last few centuries, for which the amplest records are available. And it should not be forgotten that science and literature are anthropological material no less than magic and the folk-tale.

One frequent source of weakness in theories of social evolution has been a tendency to a certain doctrinaire narrowness. A clear view of one aspect of the facts has too often led to a neglect of other equally important aspects. Thus one scholar has been inclined to attribute everything to the physical environment. Another has emphasized the contact between peoples. A third has pointed rather to their internal social organization. It has seemed to me evident that all these factors, and some others as well, are real and essential, and that what is called for is not a choice, nor even a compromise, between the rival theories, but a synthesis.

In view of the public for which the book is primarily intended, I have permitted myself the occasional use of a few non-technical terms, which are commonly avoided by scholars, but which have a secure place in general literature. Chief among these is "savage," which is now taboo to the anthropologist, although the expression "primitive man,"

which has taken its place, is not clearly preferable.

For the convenience of college teachers who may wish to use this book in connection with courses in sociology or social philosophy, I have added to each chapter a brief list of references for supplementary reading. These are only to a small extent authorities for statements in the text. Many contain presentations of theories which I have criticized; some are criticisms of positions which I have adopted; others are treatments of closely related topics. The object of the selection has been to provide the student with the means of forming an independent judgment on the questions at issue.

BRYN MAWR COLLEGE,
April, 1926.

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PART I

GENERAL CHARACTER OF THE PROCESS

CHAPTER I

WHAT IS SOCIETY?

No one doubts that there is society; but as to what society is there has been, and still persists, an extreme diversity of views. Nevertheless in recent years the rapidly increasing knowledge of social phenomena of all kinds seems to be bringing about something like a consensus of opinion, especially among those engaged in actual research in the various parts of this field. The express statements are still far from agreement, but the attitude and procedure of the investigators speak louder than their words. It will be the aim of the following pages to formulate as simply and clearly as possible the working-conception upon which opinions seem to be converging.

THE CONFLICT OF THEORIES

Among the theories of human society there is one broad class, of great historical importance, according to which it is not natural, but is a product of man's inventive ingenuity. The selfishness of men is so conspicuous, their quarrels are so frequent, and their need of government to keep them in some sort of tolerable order is so manifest, that it is no wonder that this hypothesis has been attractive to many acute minds. If we were born for a social life, would we not fit into it more smoothly and readily, without having to be put and kept in our places by force? Sometimes an exception has been allowed in favor of family life. To that

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extent man has been regarded as naturally social, and the larger tribal and civil organizations have been treated as artificial extensions of the family. The advantages of peace and harmony having been sufficiently illustrated by the comfort and security prevailing within the family group, a general agreement is conceived to have been made between neighbors to cease their quarreling and to unite their forces under a common leader, who should decide between their conflicting claims, punish the rebellious and recalcitrant, and protect them all from enemies abroad. Sometimes even the family has been set down as unnatural. A permanent union between man and woman is now everywhere encouraged by all manner of sanctions, religious, economic, and (in the narrower sense) social; nevertheless the wide prevalence of irregular and temporary sex-relations is notorious. Must not marriage, then, be regarded as being quite as unnatural as civil authority? Some writers, especially in the eighteenth century, have taken the extreme position, that man is naturally a solitary animal, and that all forms of social union have been purposefully contrived, some wisely, some not so wisely, for the furthering of the egoistic ends of some or all of the individuals concerned. In detail, as in their spirit and animus, the interpretations vary greatly. The same institution may be regarded as supremely beneficent to the whole body of citizens, or as a shrewdly contrived means of oppressing the vast majority for the benefit of a few. But in their general outlines the theories of this sort are essentially similar.

At the opposite extreme are the theories which regard man as a naturally social animal and interpret the institutions of society as external expressions of his inner instinctive constitution. Many familiar lines of evidence point in this direction: man's love of companionship and hatred of

loneliness; his quick sympathy; his sensitivity to praise and blame; his need of a combination of efforts in order to satisfy his wants; and the faculty of speech. Languages, to be sure, are conventional. There is no natural bond between the word and the thing it signifies. But if the particular languages are not natural, the impulse to express oneself by means of symbols evidently is. Even deaf-mutes show this impulse; while animals like the raven, which have a considerable power of articulation, show it not at all.

However, the example of language illustrates very plainly the essential limitations of this type of theory. No connection is made out between the natural endowment and the conventional usage or institution as we find it. Nature apparently determines that we shall have some sort of family union. But what brings into existence the prodigious variety of forms of the family with which an enlarging experience has made us acquainted? Man delights in making pretty things and in exhibiting these to his fellows. But what determines the diversity of artistic standards? He is, let us say, a "political animal." What, if any, is the natural form of political union, and whence have come the rest? Perhaps man is also a religious animal. But that tells us little about the religions of the earth. Are they guesses at truth? Are they the inventions of extortionate priests or of timid tyrants or of wise and benevolent statesmen? The theory of man's social instincts gives no starting-point for an answer. It leaves us almost as ignorant about the nature of society as we were before. Add to this the fact that the theory is essentially static, while precisely the most interesting problems of society are those connected with the transformations it has undergone and is undergoing. The instinctive nature of man has, at least during historical times, suffered no changes of any mo-

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ment. It is to all intents and purposes a fixed datum. If this, then, is to be regarded as containing all that is essential to society, the prodigious developments of the last few thousand years must be regarded as superficial, touching nothing that greatly counts.

A third class of theories is connected with the conception of the *social organism*. Society according to this way of thinking, is indeed natural—as natural as the solar system or a blade of grass. But its nature is not that of its components: it is not to be looked for in the instincts of individual men, however necessary these instincts may be to the existence of society. Society is a larger unity in which men are combined in the most complex and varying ways; and the mode of their interconnection is quite as important in determining the character of the whole as are the human units themselves. Society is a living being, an organism; and its members are, as it were, its cells. A great deal of ingenuity has been expended in tracing out the analogy between the social and the animal organisms. Organs and tissues; the functions of nutrition, circulation, excretion, reproduction, and nervous stimulation and coördination; adaptation to environment, the struggle for existence—all these and many other conceptions have been carried over from biology into sociology and applied with little or no hesitation to the analysis and explanation of social phenomena. Even the notion of organic species has been imported, and with it the notion of a life-history characteristic of the species; so that different societies falling under the same classification were expected to pass through similar stages in a fixed order, and to exhibit at each stage a number of otherwise inexplicable parallelisms. The climax was capped with the notion of an over-soul. If the animal organism, and in particular the human organism, has not only a body

but also a mind, or soul, must not the social organism be similarly double? There have not been wanting theorists to maintain that without the hypothesis of a collective mind, numerically distinct from, but analogous to, the minds of individual men, the phenomena of national behavior can not be understood.

It must be confessed that there are few natural analogies which have been more helpful and instructive than this. Without it the students of society during the nineteenth century would have lacked many a fruitful suggestion. Analogy is, in fact, the one great guide in the farther reaches of research—the only possible guide into the unknown. Better a direction that sometimes misleads than none at all. But analogies are dangerous as well as helpful, and the present instance is no exception. Pushed beyond their useful limits, they break down, and it is well to know when this has happened. At best they can only give a warrant to suspicion; they can never amount to proof. The science of society must rest upon its own evidences; it must carry through its own inductions. Especially necessary is it to observe this in the study of evolution; for in this field the parallelisms are particularly abundant and, at times, particularly deceptive.

SOCIETIES AND SOCIAL INTERCOURSE

We have said that no one doubts the reality of society. It may be added that few of the older theorists hesitated to assume that there are *societies*, in the sense of distinct human aggregates which can without danger of serious error be studied in isolation from one another. There is a certain ambiguity in this plural use of the term, which we must not allow to confuse us. Everyone knows that there

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are literary clubs and business partnerships and athletic associations. Men clearly are united together in various ways for various purposes; and the groups that are formed are all, in a sense, societies. But is there a wider and deeper society, which comprehends all the ways in which any of its members are, or may be, united to one another? This is evidently what men had in mind when they likened a society to an animal organism with its multitudinous organs and functions. Many thinkers have regarded states—or, as we Americans commonly call them, nations—in just this light; and on the continent of Europe this is still very frequently done. That there is a certain justification for this conception we may hereafter see; but it involves assumptions which ought not to be lightly made, and which are far from being strictly true.

How far does a society extend? In Europe, by reason of the intensity of nationalistic sentiment, it is easy to be led into identifying the society with the political unity. In America there is less temptation to that error. To us the fact stands out prominently, that in one respect the "society" in which a man lives may be limited to a village, while in other respects it may be world-wide. Among primitive peoples the case is different. The society of societies is in most instances unquestionably the tribe. But as civilization advances the ambiguity rapidly increases. In our own time commerce is international, religion is international, science is international, even sport is international. And it is not without significance, that in so far as these things remain national this is as much a weakness as a merit. Nationalism often amounts to provincialism—or worse.

The consequence of this indefiniteness of boundaries in modern society is that, sometimes with express purpose,

sometimes undesignedly or even in spite of themselves, the students of society have been shifting the center of their attention from terms to relations, from entities and classes of entities to processes. For, whether or not there are distinct societies, there is *society*; that is to say, there is social activity, *social intercourse*.

Of what does social intercourse essentially consist? Two views are currently held, which on a first examination may seem to be inconsistent, but which as a matter of fact merely supplement each other. Sometimes *coöperation* is regarded as the essential feature; and if this be taken broadly enough there is little to urge by way of objection. It must comprise not only the mutual reinforcement of efforts in a common enterprise, but the formal and informal interchange of goods and services. Rivalry, it may be said, is equally a form of social activity. But while rivalry is for the parties immediately concerned the very reverse of coöperation, it takes place before, and with reference to, other persons for whom it has a positive value and who are prepared to make some return for what they receive. Economic competition, to take the most obvious example, is clearly a means of securing to the public the largest measure of service from the competing parties; and at least the successful competitor—and generally in some measure the others also—obtains a substantial reward. On the whole, therefore, rivalry must be regarded as a phase of coöperation. Again, it may be said that certain members of society practice no coöperation and make no effective return for benefits received. This is in a sense true of infants and helpless invalids and the equally helpless aged. But normally some payment will be, or has been, made by them; and in any case their social life is certainly very restricted. It may be said that the idle rich also constitute

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an exception. But the truth is that though they are of very little use to society at large they do perform a variety of services—sometimes very onerous—for one another; and these services, being thus strictly limited, make of them a distinct social class.

The other view to which we have referred takes *communication*, or *suggestion*, to be the central feature, including under this head not only the communication of ideas, but the transfer of feelings and emotions and the suggestion of ends and standards of action. The phenomena of *imitation* have been especially emphasized. As we remarked above, this view does not contradict, but supplements, the other. Human coöperation is only made possible by communication in its various forms, especially as carried on by means of language. When, therefore, the activities that make up social existence are summed up under the head of coöperation, communication must be regarded as tacitly included; for it is in fact necessarily involved. But an even deeper unity may be suspected. The development of consciousness and the development of behavior appear to be everywhere intimately connected, not only in man but wherever consciousness is found; and some psychologists go so far as to maintain that they are one and the same development regarded from two different points of view. If this theory of "behaviorism" be correct, it follows that the social organization of consciousness and the social organization of behavior are in truth inseparable; and communication must be regarded both as being itself a refined mode of coöperation and as being a means of effecting further coöperation.

THE DYNAMIC STANDPOINT

In this shifting of interest from the supposedly fixed to

change and the forces of change, the sciences of society are not unlike the other sciences of our time. Everywhere old thought-boundaries have lost something of their former exactness and rigidity. There is no need to illustrate this in detail. The reader can amply verify it in the case of the science he knows best. Or, if a single illustration will suffice, consider the organic species, which once was regarded as an eternal reality, absolutely distinct from every other species however closely resembling it, and now is treated as a merely conventional designation—*vox et praeterea nihil*. Everywhere, as the entities become indistinct, the processes and tendencies which find in things a temporary balance are brought into the foreground. It is the Heraclitean flux come again. When, on a humid summer day, the water in a dish ceases to grow less, it is not that evaporation has ceased, but that evaporation and condensation balance each other.

The shift of attention can never be complete. If “ether is a noun for the verb to undulate,” the curious fact remains, that the verb needed a noun. A network of relations in which nothing is related—a knitting, not of the stocking, but of knitting—is all very well for irresponsible speculation; but sober thinking does not work in that way. Time was when philologists knew perfectly well what a language was. Now they are none too sure where a word begins and ends. But they still treat of languages and words. Morphologists still treat of species, and chemists of elements and compounds. Moreover, when the larger wholes are resolved into shifting aggregates, the smaller units still remain, to be accepted, if only provisionally, as a new limit to analysis, a new set of ultimate terms for discourse.

But the change is no less important for that. It is a loosening of dogmatisms, a redirection and enlargement of

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inquiries. It is no small gain when men have learned that there is no single clear answer to be given to such questions as, *What is a society? What is a family? What is a clan?* It disposes men to see differences as well as resemblances, anomalies as well as types. And it leads them to study functions as well as substances, energies as well as wholes and parts.

There is a very important class of phenomena which makes it especially desirable in the study of society to think in functional terms. Nothing in the organic world has a role that corresponds to that of *diffusion* in the social world. Organisms in general owe their constitution and their capacities to the heredity of the stock from which they spring. Societies owe most of what they are and do to contact with other societies. To be sure, what is thus taken over is almost always in some degree modified in the process. *Debutante* means something different in English from what it means in French; and the pronunciation also has undergone a noticeable change. But we owe the word to the French for all that. So the Christianized Eskimos owe their religious belief to the teachings of missionaries, though it is not very good Christian doctrine. When the student is able to trace the history of any social trait, he never finds it contained within the limits of one social group. We too owe our Christianity to missionaries; and the language of the French people comes to them from their Roman conquerors. The Germans are justly proud of their chemists; but the great discoveries through which modern chemistry came into existence were made in France and England. The history of any important industry carries us from people to people and from land to land. Now it is true that imperfect as the individuality of a society may be it is not to be ignored. It sets its impress upon what it appro-

priates. Even in so simple a phenomenon as the borrowing of a word this is not to be overlooked. Why was the French term which I have mentioned attractive to us, and how has it come to be applied to a personage who does not exist in France? In other connections the new impress may be very important indeed. It would be a serious mistake if we regularly avoided such questions as, why the Christianity of the Eskimos whom Stefansson studied gives so prominent a place to bathing and to the sabbath-taboo. But, after all, it would be a far more serious mistake to conceive of the history of culture as made up of the life-histories of a number of distinct organisms, acting externally upon one another.

To ask, *What is society?* is to ask how the common life of men proceeds. This is in part a psychological question, the answer to which is to be looked for in the permanent traits of man's nature, especially in his instincts and in the processes of suggestion, imitation, and sympathy. The study of social psychology is thus destined to be an important subsidiary of sociology. But it can not constitute it. In fact, the students of society have in recent years shown increased favor to the maxim, that no exclusively psychological explanation of a sociological phenomenon is ever sound. Languages differ, customs and institutions differ, beliefs and standards of value differ. A psychological explanation explains too little or too much. If it accounts for the Jews' abstention from pork and oysters, how shall it equally account for the consumption of these delicacies in which most of the rest of us indulge? With few and trivial exceptions social facts arise from previous social facts. If the study of society is necessarily in some measure psychological, it is also necessarily, and in far greater measure, historical.

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Words and their meanings are typical social facts. If we are to explain how the same noun *mine* can denote two such different things as a hole in the ground and a floating charge of high explosive, we shall have something to say about metonymy; and if we are psychologically inclined we may try to reduce the metonymy to processes of association and the like. But without an historical starting-point no explanation at all could be given. There is no reason in the nature of things that can be assigned for either meaning—any more than there is for the similarity in sound and spelling of the possessive pronoun *mine*.

THE SOCIAL MIND

On this view what becomes of the social mind? An answer to this question, even at some length, may be well worth while in order to illustrate further the functional conception of society.

Let us begin by considering what the French call *représentations collectives*, a phrase for which we have no accepted equivalent, though it might perhaps be rendered by “common contents of consciousness” or, better, by “social ideas.” We may again turn to language for an example. When Peter says or thinks *horse*, and some time later says or thinks *horse*, is it the same word on the second occasion as on the first, or another word just like it? If we have no taste for metaphysical haggling, and if we do not regard the question as too silly to deserve an answer, we will certainly say that the same word has been used twice. A word is the sort of thing that can be repeated. We even recognize that the “same” word may recur with a certain variation of meaning. The first *horse* may refer to a living animal, the second to the wooden horse at Troy. It is

characteristic of words to admit of such diversity of usage. Now suppose it is Peter that uses the word on one occasion and Paul on the other. We should still not hesitate to say that it was one word, even though we suspected that the two men used it with a slight difference of connotation. What is more, there are many millions of persons who use this same word in thought and speech, and along with it some thousands of other words, belonging, as we say, to the English language.

Now a word, whatever else it may be, is pretty clearly a psychological entity. Perhaps "psycho-physical" would be the better designation; but let us consider the word in its merely psychical aspect—as silently thought, if you please. *Horse* still remains a word of the English language. Now psychologists have traditionally designated as an "idea" something peculiarly private, existing in only one man's consciousness and open only to his inspection. But the word *horse* may be thought by millions upon millions of men. Moreover, if you ask why Peter or Paul uses and understands the word as he does, the answer cannot be found in personal and independent experiences of his. He learned the word—learned it in learning to speak English. It was used before his time. It will doubtless be used for centuries after his death. Thus the word is something that many minds possess in common. It is a bond between them. This is what is meant by calling it a *représentation collective*, or social idea.

What we have said of the word may be said, without essential modification, of the hosts of dogmas, ways of thinking, standards, ideals. They belong to the individual only because he has learned them from others. The dogma of the Trinity, for example, is a characteristic teaching of Christianity. It has had a long history and has undergone

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important transformations—as words do also. If Peter or Paul accepts it, it is probably because he has been brought up under Christian influences. It is certainly not an “idea of his own.” If it has a unique personal nuance in his interpretation of it, there is perhaps something equally personal in his use of the term *horse*.

The conception of collective, or social, psychical entities may be greatly extended. It is not only in cognition that they appear, but in feeling and desire. Our sentiments of comedy and tragedy—in what sense do they belong to us? Only as part of a social heritage into which we have been inducted. It is not even as individuals that we see a joke. Oliver Goldsmith, an Irishman, was a member of a famous London literary club. One day at dinner he startled the company by maintaining that a man in eating moves, not his lower jaw, but the whole top of his head. At once they all tried to show him his error, and soon the whole table-full were vigorously moving their jaws in order to demonstrate to him how the thing was done. Goldsmith, however, persisted in maintaining the contrary. He moved the top of his head, he said; and, holding his chin steady, he triumphantly did so. There was no convincing him. In the next century that clever English essayist Macaulay, in a *Britannia* article on Goldsmith, cited this as an illustration of his curious partial imbecility. Poor Goldsmith! He tried for years to penetrate those English skulls with his unfamiliar variety of Irish humor; and his only reward was a bantering line to the effect that though he wrote like an angel he talked like poor Poll.

Our habits too are only in part our own. Indeed, they are so bound up with common conceptions and sentiments that this could not be otherwise. There are, of course, personal habits, as there are personal preferences; but they

amount to less than we sometimes think. We imitate our fellows, consciously or unconsciously, and through imitation we build up our own behavior. Many of our habits are connected with customs which have descended to us from a remote period of time.

The French sociologist Durkheim, to whom the conception of *représentations collectives* is due, notes that social phenomena are distinguished by the pressure towards uniformity which is to be observed in them. This pressure is exerted in many ways: sometimes, for example, by threats and blows; sometimes by the inconveniences to which a lack of uniformity leads. There is commonly no punishment for the misuse of words; but it may easily lead to contempt and shame, and more easily still to misunderstanding. Goldsmith's non-conformity to the English standard of a joke must have caused him some real vexation, for when we "string" our friends we like them to know it.

As memory and habituation give unity to the individual mind, so suggestion and imitation give rise to a unity which far transcends the individual. It is this larger system that we call the "social mind." No metaphysical assumptions are involved in this expression, any more than in speaking of the English language or the Puritan sabbath. It stands for a fact: the fact that in our mental life thoughts and their symbols, sentiments and their fetiches, customs and prejudices are widely shared, and belong to us as individuals only secondarily and incidentally.

The expression also stands for something in the way of scientific methodology. To make this clear let us again consider language.

Twelve hundred years ago, the word *oak* was pronounced *ahk*. Six hundred years ago it was pronounced *awk*. There is a whole family of words which show a similar

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vowel-shift. Now during all this time the English language has been spoken by individuals. The changes of pronunciation that have occurred must have taken place in, or between, individuals. Either some men must have altered their mode of speaking, or some must, as children, have caught the words wrongly from their parents. But philology knows nothing of those men. It treats only of the words and their history. And without any knowledge of the individual speakers it is nevertheless able to give a connected history of the changes, to classify them, and to bring them under empirical laws.

It is the same with changes in meaning. *Bead* once meant a prayer. Through a very common sort of metonymy it came to be applied to the little threaded ball by which the prayer was counted; and, as it happened, the earlier meaning was forgotten, though in the cognate German it is still preserved in *beten* and *Gebet*. Now much less is known in a scientific way on this subject than on the subject of pronunciation. It has not been found possible to bring the changes under laws comparable to those which describe the shifting of mutes and vowels. But useful classifications can be made—useful, that is, in suggesting to the philologist supplementary hypotheses by which gaps in his historical record can be filled out, and which, with good fortune, may then be confirmed by direct means. Now, in this field, as in the other, individuals play no part. There must have been some one who first made use of the figure of speech by which a bead was called a prayer. Perhaps many men did so independently. Some one, we may assume, first used *bead* in the new way without any sense of its being figurative—though the difference between literal and figurative usage is not a clear one. It was in the speech of real individuals that this became common and

then universal. It was, again, in or between individuals that the older meaning was lost.¹ But philology knows nothing of them.

It may be objected that this is philology's misfortune. But that is not the case. Philology could not possibly deal with those individuals even if information about them were perfectly available. In many kinds of study we must deliberately neglect the trees if we are to see the wood. A bird's eye view is necessary in order to get the truth. But, furthermore, experience has taught that when a "biographical" explanation is given of any language-phenomenon it generally turns out to be quite false, or at least shallow and insufficient. We are misled by the striking instance that has happened to be recorded—even the instance that we have ourselves constructed in fancy. The probability generally is that, if ever so real, it counted for little or nothing in the general effect.

It is true that individuals sometimes count even in the field of philology. New words are coined, and new meanings are deliberately attached to old words; and some of these inventions find their way into general use. Cicero, for example, in translating from Greek into Latin, was led into making a number of felicitous inventions, without which later writers might have been sadly at a loss. *Moralis* is perhaps his best. Many similar examples might be cited from the history of our own language. New spellings are sometimes foisted on the world; but when, like those of Noah Webster, they survive, it is generally because they are supported by important analogies. A spelling like "siv," what-

¹The illustration is taken from O. Jespersen, *Language: Its Nature, Development, and Origin*, p. 175, but Jespersen's explanation of the phenomenon is not followed. He does not appear to take sufficient account of the figurative use of language.

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ever it may have to recommend it, has scarcely a chance. Even a lexicographer has little power to change a pronunciation, and indeed it does not lie within his province.

It should be observed that successful interference with language is mostly confined to certain fields. We see it at its height in science, and above all in mathematical science, where the "freedom of definition" is a matter of principle. Science can not work with the tools of common speech. It has to devise notations and technical vocabularies of its own. The transplanting of science from one language to another gives rise to similar exigencies, as the work of Cicero illustrates. Modern industry has furnished the occasion for a host of new terms, and many of these were of deliberate coinage. Several points are to be noted here. First, the great bulk and the general character of the popular language are unaffected. Technical vocabularies remain in a sort of isolation; and the terms that do find their way into the general stock do so in very much the same fashion as borrowings from a foreign source. "Bichloride tablet" is poor chemistry, just as "debutante" is poor French. Secondly, even in science and in modern industry, it is not enough to coin a term or invent a symbol, in order to give it lasting currency. We do not now speak of the satellites of Jupiter as "Medicean planets," nor do we use Newton's notation for the differential calculus. Just now anthropology is oppressed by a superabundance of terms by which to denote the one-sided kinship-groups, with which totems are associated, but which are often found apart from totems. Occasionally some one attempts to relieve the situation—by inventing a new term for the purpose; but a consensus is still far from being established. Logic is in the worst condition of all the sciences, nearly every new writer introducing something fresh in the way of symbolism, which sel-

dom enough finds acceptance. It is clear, therefore, that even in science, where coinings are most necessary and most numerous, the coining itself is not sufficient to ensure currency. Accordingly, when we explain the use of a given technical term by referring it to its author, our explanation is far from being sufficient. We have left out of account the wider conditions, extending far beyond the limits of that man's mind, which made the term in question gain a permanent acceptance.

What has just been said, perhaps too diffusely, of the study of words, holds equally of the study of customs and religions, arts and industries. In no small measure we find it true even when we study the growth of law and that of science itself. Individual men are merged in the larger movement. When a story is told to account for the origin of a custom, it is generally the case that the custom is the origin of the story. The science of customs has little use for stories. To explain a custom we compare it with other customs, and trace it back, not to some reformer or other, but to some real or hypothetical earlier custom. So it is with the development of agriculture or pottery or the forging of iron. Doubtless some one first made cast iron. But the explanation of the invention is given, not by mentioning that man's name, but by showing as fully and precisely as possible the economic and industrial conditions that led up to it. The invention of printing is an honor which is claimed for several different men; but in advance of the settlement of that dispute we have a pretty clear idea how the invention came to be made and how the exploitation of it proceeded.

We shall have to return to this topic on another occasion, and so shall not enlarge upon it further here—except for a word of caution. No one today wishes to maintain that

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the great men in the various fields of human activity are really no abler than the rest, or that their contributions to progress are unimportant. Cut off the five percent of most highly gifted men in each field, and little if any advancement would be made for a long time to come. But the great men, like the small men, live not for themselves alone. The thoughts they think, the problems they attack, the ambitions they hold dear are more than theirs. About this there is no dispute—not even in the case of those great religious teachers who have been worshiped, and still are worshiped, as divine. The most conservative of Christians has learned to speak of the “preparation of the gospel.” When Jesus preached his Sermon on the Mount, why did anyone believe his doctrine? For, as was remarked at the time, he cited no authorities. Men believed because they were ready to believe; because he formulated for them convictions which they had long dumbly and obscurely felt; because he promised what they had long deeply craved.

This, then, is what the “social mind” means today in the way of standpoint and method. It does not stand for any mysterious spiritual being. It does not stand for any clearly detached entity at all. The social mind *shades off*, as the English language does. But it is none the less real for that.

Compressed into a few words, the foregoing account of the nature of society might read: Society is the field of social intercourse, that is to say, of communication and cooperation. This implies that particular societies must be conceived as having their limits where intercourse has its limits; and these, as we know, are not definite and absolute but matters of degree. The old question, whether society is natural or artificial, has become inept. Invention pre-

sumably plays a part in all the transformations of culture, including changes in social organization. But the changes are seldom or never to be accounted for in terms of any one man's will or of any agreement between men; for, on the one hand, the voluntary action of individuals is largely inspired by socially felt needs, and, on the other hand, it is the reaction of the society itself that determines whether the initiative shall be fruitful or not. Psychologically, as well as in time and place, the society has a certain unity, which is denoted by the term "social mind"; a unity which is not to be superstitiously interpreted, and must never be neglected in any branch of social inquiry.

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CHAPTER II

THE CONCEPTION OF SOCIAL EVOLUTION

THE term "social evolution" carries with it for not a few anthropologists, especially in America, an evil cluster of associations, and they would not be sorry to see its use discontinued altogether. It stands to them for an absurd pre-scientific dogmatism, conjoined with an even more absurd indulgence in imaginative theorizing. These associations, however, have only an external connection with the term. They can be stripped from it and leave behind a fairly clear and very important essential meaning. Every now and then some reformer of our intellectual life proposes to help us out of our difficulties by abolishing a word—"consciousness" or "cause," for example. If all of these proposals had been followed, we should be sadly embarrassed for want of words with which to express ourselves. It is better to keep our terms and to try, by means of timely explanation, to avoid any needless misunderstanding.

Temptations to *a priori* theorizing and to guess-work have not been wanting in the study of society. The sum of anthropological data has been until recently—in many departments it is still—altogether inadequate in comparison with the requirements of sound induction. Hence, unless the scholar was content simply to label and classify his facts, he was bound either to fetch the explanations from his "inner consciousness" by a formal analysis of his pre-conceptions—the *a priori* method—or to build one pre-

mature generalization upon another. Not that the two tendencies are incompatible. The metaphysician finds confirmation strong as holy writ in the trifles of archeological discovery; and the too ingenious framer of hypotheses has usually a metaphysical bias that gives direction to his fancy.

These tendencies are not to be regarded as altogether vicious—unless immaturity is a vice. They are universal characteristics of immature thought; and sociology is the youngest of the sciences. If it were not for vain speculation, there would never be speculation of the more worthy kind. In our day and generation a science grows rapidly; but it will doubtless be long before the study of society is in all its departments a sober empirical inquiry. In the mean time we can be conscious of our weakness and proportionately self-skeptical; or, if that is not always possible to us as individuals, we can at least be skeptical enough toward one another.

In the next chapter we shall consider two of the most serious and persistent misconceptions of evolution in general and social evolution in particular: first, the assumption that evolution is necessarily an advance through a series of pre-determined stages toward a final goal; and, secondly, the optimistic faith that there is in nature a universal tendency to evolutionary change. In the present chapter we must try to make clear in positive terms what social evolution is.

A formal definition, however, will not be attempted. It is always possible to give a semblance of clearness to a subject by means of definitions of terms; but often enough the definitions that have been laid down contribute nothing to the analysis of the phenomena to be studied. The geometer can with entire arbitrariness set forth what he chooses to

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denote by "circle" or "triangle," without bothering his head as to whether anywhere in nature such a figure is to be found. But in empirical science we must be more subservient. We must try to square our language with the facts; and the facts do not always lend themselves to sharp delimitations. Especially in the sciences of life and society, what we are generally able to make out is, not a logically definable class, but a *type*; that is to say, a class which is determined, not by a definite set of characteristic features, possessed by all the members, but by resemblances through which the phenomena are grouped about a common center.

So it is with the type of change which we call "social evolution." If we were to define the term in such a way as to cover everything that can fairly be brought under it, little, if anything, would be specified beyond the fact that the change must be *gradual*. We might let it mean just that. In biology something of the kind has occurred. The familiar definitions, which once seemed illuminating, have turned out to be unsatisfactory. A great part of the phenomena that were supposed to be included can be brought under them only by violence. As a result, *any* modification of a species is now regarded as an evolution. Thus, whereas in sociology the term "evolution" is still commonly taken to mean a certain sort of change, opposed to a certain other sort of change called "degeneration," in biology degeneration is regarded as a species of evolution. On the other hand, the very persistence of such a term as "degeneration" indicates sufficiently that even in biology the notion of a *direction* in evolutionary change is still, however vaguely, entertained. At any rate, in the social sciences evolution is generally felt to be something more than change; and if we rob the term of this further mean-

ing we shall eventually have to find another term to take its place.

Instead of aiming at an abstract definition, which would be too broad or too narrow to be serviceable, let us bring before our attention a particular instance of social evolution, and single out what seem to be the significant features of this example. We may then use these as a point of departure for a wider estimate of kindred phenomena.

Let us, then, consider what is meant by the *origin and advancement of science*.

THE EVOLUTION OF SCIENCE

If we were to examine the body of knowledge possessed by a tribe of American Indians, we should speedily find that it was not easily divisible into the various branches which we recognize in our treatises and encyclopedias. History, physics, biology, jurisprudence—none of these has a distinct existence. Yet the amount of knowledge that is possessed is considerable. The tribe has its wise men, who are familiar with its traditions and well versed in the policies of state-craft. They perceive the signs of the coming seasons; they understand all the stratagems of the chase and the war-path; they are learned in taboos. And they have, some of them, a more estimable knowledge still: that of the unseen but mighty supernatural powers, and of the inducements, or the magical contrivances, by which these may be conciliated or controlled. If we were to attempt a classification of the tribal wisdom, it would be mainly along the lines of the principal occupations of which the tribal life consists. Partly intersecting these lines would be the great distinction between the sacred and the profane.

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If we were to take for the object of our study the knowledge possessed by such a people as the Egyptians in the time of Herodotus, we should find that the diversity of occupations had vastly increased and that knowledge had grown proportionately. We should be struck by the distribution of the arts and crafts among distinct guilds, within each of which peculiar standards and a peculiar technique had developed. Most of all, the wisdom of the priests would impress us: the practice of medicine and surgery, and the knowledge of the gods, their attributes and functions, and of the rites by which they must be worshiped. But still we should find that knowledge was everywhere closely attached to the particular and definite occupations of life. Among the Egyptians no interest in pure theory or in authentic historical evidence seems to have existed. A fair beginning had been made in arithmetic and geometry; but the arithmetic was for the use of tradesmen, the geometry for use in the measurement of land or in building.

If we should pass over into the Greece of that time, an extraordinary phenomenon would meet our observation. Critical, theoretical knowledge has been born—knowledge prompted by a passionate curiosity which demands the truth irrespective of its particular applications. Moreover this knowledge falls into two well-marked divisions: *history* and *science*. The former is a detailed knowledge of things and events, especially of the actions of men in society. The latter is the knowledge of the laws of nature. Thus for history the explanation of a phenomenon consists in a full and precise account of the events which led up to it; for science the explanation consists in bringing the phenomenon under a general rule, which applies not only to this case but to a whole class of similar cases. Leaving history aside,

let us examine very briefly the fortunes of the sister branch.

Science, as distinguished from technology, apparently owes its independent beginning to the discovery, in the sixth century B. C., of the law of the conservation of matter. The law, as at first conceived, was qualitative rather than quantitative, for the idea of using weight as a measure of "quantity of matter" is of later growth. But, even so, a radical modification was brought about in men's view of the world. Magic and the popular religion were now, so far as the intellectual élite were concerned, seriously weakened. As early as the beginning of the fifth century, men of science were denouncing as absurd the conception of fate, the myths of the generation and metamorphoses of the gods, and the rites of prayer and sacrifice and even of burial.

But this early science was itself a curious thing. In the first place, boldly as it set itself up against magic and the popular religion, it was largely influenced by magical and religious ideas. God and the soul, justice and nemesis, played a part in the speculation about nature, which seems grotesque to the physicist or the astronomer of today. As a matter of fact the liberation of science from religious influences has been a prolonged task, and in the field of psychology it is not even yet wholly accomplished. In the second place, science was merely science: there were no *sciences*. Physics, chemistry, physiology, psychology, sociology—all were one. The common title for a treatise was: "On the Nature of Things." Even mathematics was closely bound up with the rest. The investigator who arranged pebbles so as to outline a given figure, and then counted them in different directions, thought that he was unlocking the secrets of the physical and moral universe.

The history of science shows the gradual separation of

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the various branches from the parent stem. The first to gain a distinct existence were arithmetic and geometry. By the end of the fifth century this was an accomplished fact. Two generations later we find among the works of Aristotle treatises on logic, metaphysics, physics (the general theory of the material world), psychology (including much that we should ascribe to physiology) biology, politics (including ethics), and aesthetics. Yet, as the very fact that all these writings are the work of a single man would serve to indicate, the differentiation of the sciences is still very incomplete. They form, as we say, a *system of philosophy*. A competent mathematician might be ignorant of them all, and Aristotle himself seems to have known very little mathematics; but his own system, from logic to aesthetics, is all of a piece. Very much the same methods are employed throughout, and the same structural conceptions are everywhere dominant. In later antiquity a new mathematical science, that of mechanics, makes its appearance. It is closely connected with geometry, and depends upon it; nevertheless it is characterized by conceptions, such as force and velocity, which are foreign to geometry, and by a much larger use of experiment.

After the rebirth of science in modern times, the same process continues, but with an unexampled rapidity. Mathematics leads the way, and its continued development, both on the side of pure analysis and on that of geometry and mechanics, has been prodigious. It comprises now so vast a realm that certain of its provinces seem to be quite as foreign to one another as human interests well can be. The ancient physics has been replaced by a dozen branches varying from thermodynamics to organic chemistry; and the sciences of life extend from morphology to psychology. The social sciences are another imposing group, ranging

from linguistics to economics and ethics. And besides all these primary (or theoretical) sciences, there is an immense body of secondary sciences, such as astronomy, geology, mineralogy, botany, zoölogy, and ethnology; and each of these includes important subdivisions.

What has caused this separation? Obviously, the increasing bulk of knowledge has been a factor. The day is long past, when all the science that men possessed could be represented by a treatise "On the Nature of Things." The day is long past, when the writings of a single man could treat authoritatively of the whole array of natural sciences. Early in modern times Francis Bacon was bold enough to "take all knowledge for his province," including not only science but history; and in one respect the result well justified the effort; namely, that his comparative studies enabled him to make invaluable contributions to the theory of scientific method. But in another respect the effort was a failure; for neither in mathematics nor in any of the physical sciences was Bacon a thoroughly competent scholar, and he failed to appreciate the best that was done by his contemporaries. Now, however, there is no longer room for even such a partial success as Bacon's. The amount to be learned is altogether too vast.

But the mere bulk of scientific knowledge has not been the only cause. Even in a single science, or in one department of a single science, no one head can contain all the important facts and formulas. And it is not necessary that any head should. That is the function of works of reference; and by means of elaborate bibliographies whole libraries are transformed into works of reference. The personal knowledge of the man of science is very limited; but he has a magical faculty for supplementing it in any desired direction. It is not, then, the mere bulk of science

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that limits him to a specialty. It is the need of *special training*. Every branch of investigation has a technique of its own, and it requires not only some degree of talent but long years of training to gain the proficiency of an expert.

We must now observe that while the sciences have become increasingly distinct, this does not mean that they have become increasingly independent. That is not true. Aristotle could study social problems without the use of mathematics; and, indeed, the individual sociologist of today needs to know little or none. But the sociologist of today compiles and uses statistical tables; and in their use he is guided by rules derived from the mathematical theory of probability—rules worked out since the middle of the eighteenth century by methods of the infinitesimal calculus, which were themselves discovered in the latter part of the seventeenth century. Twenty years ago the student of geology encountered an extraordinary contradiction. Physicists told him that, from the rate at which the earth was cooling, ten million years ago it must have been a fiery liquid ball, upon which not even the simplest form of life could possibly exist. Authorities in his own field assured him that for the formation of the known strata of the rocks hundreds of millions of years had been necessary, and that the oldest fossils were many times ten million years old. It was an absolute *impasse*, or seemed to be. And the solution of the mystery came neither from physics—as physics was then conceived—nor from geology. It came from the discovery, by chemists, of the radio-active elements. The breakdown of the radium atoms, which proceeds constantly, liberates heat; and the quantity of radium and of other radio-active substances contained in the earth may well be so great as to balance, or even more than balance, the effect of surface cooling. A hundred million years ago the

condition of the earth may thus have been substantially what it is today; and if the geologist has evidence to prove that this is the case, no one now wishes to contradict him. The physicist, for one, will allow him all the time he needs.

There is a sense in which pure mathematics is independent of all other sciences. As a definite body of doctrine it can be demonstrated without the slightest reference to anything beyond its own limits. The other sciences depend on it; but the dependence is not reciprocal. But for its continued growth pure mathematics has been dependent upon the stimulus coming from concrete observation. To only a limited extent has it made its own problems. These have come to it from without. Cut off from the inductive sciences, it would be dead indeed.

On the whole we may say that the more the special sciences have grown apart the more they have been bound together—that is to say, the more far-reaching and fundamental the connections have become. It may be added that in the last century and a half a more intimate connection has grown up between science and history. The conception of *evolution*, which marks the synthesis of the two disciplines, is now a dominating influence in both. Especially in the biological and social sciences the genetic method is of overwhelming importance; classifications are so far as possible based on genetic relationships; and the most interesting problems are those connected with origins.

But we may go still further. When science was young it was a thing apart. Its utility for common life was slight. Even in Bacon's day it could still be said that the great inventions had all come independently of any scientific aid. Men had invented gunpowder by accident, and were still trying in vain to explain the wonder. But the more science has developed and the farther its researches have diverged

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from the traditional lines of human thought, the more closely it has touched every practical concern of life. Science is remaking the world. Civil and mechanical engineering, the chemical industries, and modern medicine and surgery sufficiently illustrate its power. On the other hand, the closer contact with practical interests is not injuring science. On the contrary, science is benefiting immensely. The scientific investigator must now, as always, work with a pure devotion to truth. Insight comes before power. But in a larger way the movement of science is a response to practical exigencies. Ultimately science may owe as much to industry as industry does to science.

DIFFERENTIATION AND INTEGRATION

Let the above pass for a hurried and very imperfect description of a typical social evolution. It is to be hoped that, in spite of all defects, the essential features of the type have not been obscured, and that we shall not be misled if we attach to this description some general observations.

The process is, in the first place, one of *differentiation*: a gradual increase in variety. The appearance of science is not a mere addition to the sum of knowledge. It is the beginning of something new, as new as the bird or mammal as compared with the reptiles and amphibia that preceded them. To be sure, there is no breach of continuity. The rules-of-thumb of the Egyptian builders, like the records of eclipses kept by generations of Babylonian astronomers, were, if not science, so near to science that no clear line can be drawn between them; while Thales, the father of Greek science, was probably influenced in his choice of water as the primary form of matter, by the popular myth which made Ocean the oldest of the gods and by that other

myth which made the river Styx the reference of the most binding of all oaths. The change, then, is gradual; but it is none the less real. Similarly, in the successive separations by which the special sciences and their many distinct branches have come into existence, it is not a mere increase in the bulk of science like that of Thales, or even like that of Aristotle, that we observe, but the birth of distinct disciplines, characterized not only by their diverse subject-matters but by their peculiar methods.

In the second place, the process is one of *integration*. Primitive science, in spite of—or rather because of—its relative simplicity, is for the most part a loose bundle of dogmas. The science of today is *organized science*. It is true that the early thinkers deduced a great number of theories from a few first principles; and this gives a specious appearance of unity to their work. But a close examination shows that the deduction is all too often directed by the most arbitrary and fantastic analogies. There is nothing comparable to the unity which the physical sciences now owe, for example, to the principle of the conservation of energy or to the phase-rule, and which the biological sciences owe to the discovery of the cell. A similar remark may be made with regard to the relation between science and technology. The separation of science from industrial technique has had for its result that industry is very largely dependent on science. The practice of medicine illustrates the same point. So long as men asked simply: "What is good, and what is bad, for the digestion?" it was impossible that any sound treatment of dyspepsia should be worked out; for the things that aid and the things that hinder digestion are as diverse as possible and lend themselves to no useful generalization. Moreover, what seems for a time to stimulate the action of the stomach or intestine

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may end by permanently weakening it. It was necessary first to study the phenomena of digestion *disinterestedly*—that is to say, not without interest, but as objectively as if the alimentary canal were a series of test-tubes. That this should be possible, chemistry was necessary; and this meant not simply the chemistry of digestion, but the science of chemistry, worked out, for the most part, without the slightest reference to the particular phenomena which digestion exhibits. Thus the practice of medicine could not become “scientific” by itself. It had to wait upon the development of pure science. As for the relations between the different branches of science, we have already labored that point sufficiently.

These two characteristics of the advancement of science—the fact that it is at once a differentiation and an integration—justify the application to it of the term “evolution”; for that is what in the social sciences, and indeed everywhere outside of the field of biology, evolution is commonly understood to mean. Fifty years ago the term was employed in this sense by biologists also; but, as we remarked above, they now include under it any modification of a species, whether in the direction of further differentiation and integration or not. In sociology, however, this change of usage, though it is sometimes anticipated, has not definitely occurred. Accordingly, in what follows, we shall cling as closely as possible to the older (Spencerian) sense of the term; and for the sake of uniformity and to avoid confusion we shall do so even with reference to biological phenomena.

Evolution, as differentiation *plus* integration, may be otherwise defined as *gradual increase in complexity*; and this definition is useful in that it suggests the distinction between the compound and the complex. “Compound”

means consisting of a number of parts, which may be similar. The compound eye of the common house-fly is a familiar example. But "complex" means consisting of parts unlike one another in their structure and function, and dependent on one another for their continued activity or even for their existence. Thus, if it were asked whether the eye of the fly or the human eye is the more complex, the answer would certainly be in favor of the latter. So the vast empire of the Persians was not so complex as the kingdom of Sweden. That empire consisted, indeed, of parts that were in some cases extremely dissimilar, but the connection between them was of the loosest.

INCREASED EFFICIENCY

There is a further characteristic of social evolution, which to many minds seems even more significant than the formal characteristics upon which we have hitherto dwelt. This is the *increase of efficiency*. The advancement of science, for example, has been an adaptive process. Knowledge serves a variety of ends, not all of which have in any direct way been affected by scientific progress; but certain of the most important have undoubtedly been furthered. To attempt to analyze these would lead us far beyond the necessary limits of this discussion. But without any analysis we may simply point to the higher degree of truth of scientific knowledge, the greater certainty of application which comes from its peculiar clearness, and, finally, the improvements in technique which science has introduced into many branches of human activity.

Social evolution, conceived as involving increased efficiency, and thus as being a *good* thing, is pretty much what is commonly meant by "progress"; and in the follow-

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ing pages this latter term will often, for convenience's sake, be used instead of the longer and more cumbersome expression. We should note, however, that "progress" is frequently used to denote any social change, whatever its objective character, which is thought to be for the better. We give the name to any movement in the direction of our own ideals. If we are democrats, the drift to democracy is for us progress. If we are free-thinkers, we regard the decay of religious faith as progress and each revival as a relapse; etc. It is clear, however, that generally something in the way of objective characterization is intended; and this seems to be what is less ambiguously expressed by "social evolution."

It is not difficult to see why a process of differentiation and integration should give rise to an increased efficiency. The complex has certain obvious points of superiority as compared with the simple. The differences between the parts allow scope for a better performance of their various functions. Plato in the *Republic* called attention to this advantage in the case of the division of labor and the specialization of training which that permits. Furthermore, integration gives to each part something of the strength of all. Not only particular effects but collective effects are enhanced.

If, however, we are not to be cheated by words, we must note that the greater the differentiation the greater the *need* of the mutual support which integration brings about; and this need is not always satisfied. It is fatally easy for the narrow specialist to become isolated from workers in allied fields, and, as a result, to wander off into the wildest speculation. Evolution *as such*, with all the limitations which the italicized words imply, is very generally an excellent thing; but it is attended with a great

deal of failure. Sometimes the only practicable course to pursue is a return to a relative simplicity. In such a case it is the very reverse of the typical evolution that is desirable.

In any case, it is the formal characteristics of the evolutionary process that should be emphasized; for these can be attested with less risk of error from personal bias. We may hold, like Rousseau, that the advancement of science has contributed to intensify the misery of the great majority of mankind, or even that the whole history of civilization has been an increasing disaster to human happiness. Certain it is that the lowest savages show a far greater degree of contentment with their mode of life than we with ours. But complexity is not measured in terms of likes and dislikes. The evolution of which we disapprove is still evolution.

It would be a mistake, however, to suppose that the relation to efficiency can be wholly eliminated from the conception of evolution. The fact is that integration is itself at bottom a functional conception: the unity which it implies is a *working-unity*. That is why the attempts which have been made to extend evolutionary conceptions to the field of cosmology—as in the theories which trace the “evolution” of the solar system from an assumed primitive nebula—are unsatisfactory. The aggregation of matter in the central body and its various attendants may pass for a differentiation; but it is only when the whole system is imaginatively viewed as if it were indeed a *system*, formed upon a plan in which each member plays its own distinctive part, that we can speak of an integration. Otherwise nothing is left but a mechanical stability. Now some degree of stability is essential to integration; but it is the stability dependent upon a condition of mutual adaptation.

FURTHER REMARKS

Sometimes an increase in variety alone, without reference to any increased interdependence, is spoken of as an evolution. There is a certain justification for this usage, if only because of the fact that wherever any marked differentiation takes place, some degree of integration is very likely to accompany it—unless the new types are so separated in space that they can not affect each other at all. Each type occupies a field, which becomes more or less exclusively its own, because it is best adapted to it; and on a superficial view there may seem to be no connection between them. But, as a rule, it is only because the other types have completely occupied their field, that it is possible for a given type to be exclusively adapted to its own field. The evolution of tools illustrates this very clearly. The carpenter and cabinet-maker have perhaps a dozen varieties of hand-saws. The varieties of hammers used in different trades is immense. Now if one were to trace the origin of saws or of hammers from the primitive types, he might without much scruple speak of the successive differentiations as an “evolution,” without regard to the question whether there was any interdependence involved or not. But, as a matter of fact, the interdependence is often there. If there were no rip saws to do the work of ripping, the crosscut saw could not be so exclusively adapted to its own work. If we had to drive nails with the tack-hammer it would be a very poor tack-hammer. It is because the carpenter’s hammer exists, that we can afford to have a special hammer for tacks.

Differentiation is often understood to imply an increased number of fixed and sharply determinate elements. But

an analogous general effect may be brought about through an *increased modifiability of the elements*, a potential rather than an actual specialization. The forms of art, for example, may be complex in either sense. Compare the versification of Spenser's *Fairy Queen* with that of *Paradise Lost*. Spenser's nine-line stanzas have their regular and easily recognized structure. Milton's blank verse has almost nothing of the sort; but it has capacities within it that are vastly greater than those of the definite stanzaic form. Or, to take an illustration from a widely different field, compare such a system of social relations as exists in a typical hunting tribe with that which prevails among ourselves. Relationships by blood and marriage are, as a rule, much more seriously taken by primitive peoples than by us. The closest of these bonds mean as much to us as ever, but beyond these the sentiment of kinship rapidly dwindles. In primitive society not only are the more distant connections recognized, but the different kinds and degrees are, generally speaking, more sharply differentiated from one another. They carry with them peculiar rights and duties, sometimes economic, sometimes more loosely "social." The child occupies from birth a definite status, a place in a complex system; and the young man, when he marries, acquires a further status—unless, indeed, his freedom of choice in marriage is so narrowly confined by his hereditary status that marriage can add little to the previously existing condition. Among ourselves most social relationships are independent of birth and marriage. In great part they are informal rather than conventional; and in great part they are entered into by a purely voluntary agreement. Does this mean that our system of social relationships is in so far simpler than that of many or most uncivilized tribes?

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Certainly not. It means only that in our case most of the complexity is of a kind that does not admit of a general description in precise terms. But this condition is compatible with the existence of an immeasurably greater variety than primitive society affords, as well as a no less intimate interdependence of the elementary factors.

A phenomenon of particular importance is the breakdown of fixed systems, which possess a certain degree of complexity, but are compelled to serve an altogether disproportionate range of functions. The inflectional endings of the Indo-European languages afford some excellent examples of this sort of thing, especially with regard to the distinctions of case and mood. A certain limited variety of forms had to express an enormously greater variety of relations; as the Latin ablative case expressed means, cause, manner, quality, separation, time when or within which, respect, degree of difference, standard of comparison, etc. Prepositions and adverbs were widely used for a similar purpose. Without this supplementation the case-endings would have been futile. With it they were largely superfluous; for when, for example, a preposition always "takes" the same case, it might just as well be any other case. Why these endings, like so many others, have been dwindling away during the last few millenniums, is much disputed; but it is generally assumed that the change is anti-evolutionary in character. It is admitted, however, that little if any clarity of expression has been lost. In translating from Latin into French, or from Anglo-Saxon into modern English, we are sometimes at a loss for a word, but almost never for a construction. With our much scantier allowance of etymological forms, as much is accomplished as with the whole elaborate array of the ancient declensions and conjugations. The variety that has been

lost was in part ineffective or even functionless; and it has been amply replaced by other means.

In conclusion we must observe that, even where it is unaccompanied by any marked differentiation, the process of integration itself is sometimes spoken of as evolution, and that there is a certain justification for this usage. It often happens, as a result of some change in external conditions, that the different parts of an organization cease to work harmoniously together, and compensating modifications become necessary if disaster is not to follow. These modifications, if they occur, need involve neither increase nor decrease of complexity on the whole, though both may be involved in varying degrees. Through successive changes of this sort an organization may come to be exceedingly unlike its former self; and it is natural enough to call the process "evolution." For, though no considerable new differentiation takes place, the process of re-integration is at every point closely similar to that which in a typical evolution gives rise to fresh differences. It is merely that, the parts being already sufficiently unlike one another, the adaptive modifications need not increase the existing unlikeness.

This is easily seen in the case of changes in the size and strength of parts of machines, made necessary by new demands. Such changes commonly form an essential element in the process of integration. Consider the history of the bicycle from the time of the introduction of the "safety" type. The makers had the problem of combining lightness with strength and rigidity—contrary requisites, between which a compromise had to be found. Each part had to be given the bulk necessary to support the strains which it might reasonably be expected to incur; and it could have no greater bulk. The problem was worked out by means

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of innumerable trials and observations, and the result soon became visible in the beautiful proportions of the machine. The process so far was a true evolution, involving both differentiation and integration: the former, as the size of each part became limited by its own peculiar requirements; the latter, as it became impossible to alter any one part without introducing corresponding modifications in many others. But the solution obtained is relative, more or less, to given environmental conditions. If, for example, rougher roads are to be frequently encountered, the rigidity of the bicycle must be greater; and that may involve a modification of nearly every part of the machine; and the detailed changes will be altogether similar to those which made up the previous evolution of the type. No considerable differentiation, however, need occur. The process is essentially one of re-integration.

Now if we speak of this as evolution, we should distinctly realize that we have greatly extended the primary meaning of the term. Practically all social changes, whether of customs, of standards, or of traditional beliefs, must then be regarded as evolutionary. Even degeneration will not be excluded. For, when the unity of a system is threatened, it may under appropriate circumstances be reestablished at a lower, quite as well as at a higher, level of complexity. It is not improbable that this extended meaning will eventually become established, especially since the analogy of the biological usage is in its favor; but for the present it is safer not to anticipate the change.

This concludes what it seemed necessary to say in this place with regard to the more general characteristics of social evolution. We have tried to show, in connection with a typical example, what differentiation and integration, as

applied to social phenomena, mean, and in what relation these processes stand to the increased efficiency which often, though by no means always, accompanies them. We have also noticed some kinds of social change, which depart more or less from the conception of social evolution as thus explained, and yet are not to be sharply separated from it.

In Chapter IV, after the digression which occupies Chapter III, we shall return to the subject and inquire more closely into what is meant by the *gradualness*, or *continuity*, of evolutionary changes; and in Chapter VI we shall complete this portion of our study by an examination of the significant part played by *party strife*.

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CHAPTER III

MISCONCEPTIONS OF EVOLUTION

LIKE many other scientific ideas, the idea of evolution has had, at least in part, a religious origin. It has come to us from cosmogonies and theogonies. Furthermore, even in modern times, it has been strongly influenced by certain tenets of the Christian faith. Sometimes, to be sure, and particularly in recent years, it has seemed to be distinctly anti-religious in its tendency. But, even so, the influence of religion upon the conception has not been entirely removed. Evolution as a substitute for God has been expected to do the work of God.

This has been a source of serious misunderstanding, but by no means the only source. Rationalistic speculation has been another. Both with respect to the system of the world as a whole and with respect to the institutions of human society, philosophers have been much given to genetic inquiries. They have almost inevitably sinned by oversimplifying the problems and by stretching too far their inferences from the scanty facts at their disposal. For that matter, the flood of new data, cosmological, biological, and anthropological, which has come upon the scientific world since the middle of the last century, has encouraged as well as checked the tendency to such speculation.

THE SCHEME OF EVOLUTION

Evolution has been traditionally conceived as *proceeding by regular stages toward a predetermined goal*. The

typical illustration is the development of the individual organism, which starts from the germ, follows the course of a life-history characteristic of the species, and issues in the attainment of a mature perfection. According to many thinkers the very conception of social evolution has implied the assumption of such an ordered course of events. The same, indeed was long true of the conception of the evolution of organic species. This too was regarded as proceeding in a veritably systematic fashion, according to a complicated but beautiful plan of creation.

The Christian doctrine of the fall and redemption of mankind has had a curious influence upon evolutionary theory. This doctrine presented a coherent scheme, in which all human events might be comprehended. It made history a story, or, better, a drama, through whose many episodes ran the connecting lines of a unitary plot. In one way the Christian conception was clearly opposed to evolutionary ideas. Man's existence was supposed to have begun at a very high level of culture: the earliest human family contained a herdsman and a gardener. The savage peoples of our own times, as well as those described by ancient writers, were conceived to have sunk to their lower level by a process of degeneration, that is, of forgetting, which the scattering and isolation due to the confusion of tongues at Babel had materially assisted. But, on the whole, the doctrine was favorable to evolutionary speculation. It put things in connection, and left to the social philosopher the task of substituting one scheme for another; and after a certain point the two schemes need not be very different. The majority of civilized peoples might still have ascended from a savage condition, into which their remote ancestors had fallen.

In the early Greek church there was an interpretation of

the story of the fall and redemption, which assimilates it more closely to evolutionary ideas than does the common Western interpretation. According to this view, the fall is merely an allegory of creation. It is the proceeding forth of all things from the divine unity, and their fixation in matter; while redemption is the return of all things to God. The conception is Platonic rather than Christian, and back of Plato can with all probability be traced to Anaximander of Miletus; but like so much else that is Greek it has powerfully influenced Christian belief even in the west. German mysticism is pervaded by it; and from the mystics it passed to the speculative philosophers, and particularly to the great system-makers who followed Kant. It has two striking advantages from the point of view of the dogmatic evolutionist: it makes of history a single progressive movement, and it envisages that movement as being itself part of a universal cosmic process.

In the eighteenth century the early history of mankind was a favorite subject of inquiry; but in the absence of any great amount of definite information the procedure was perforce mainly deductive. Altogether the most important attempt was that of Rousseau in his *Discourse on the Origin of Inequality*, which in its time was a serious contribution to science and even today is full of interest and suggestion. Rousseau frankly explains the rationalistic nature of his work, comparing it to the cosmologies of physicists like Descartes, who, assuming, to begin with, an original simple condition of the universe, tried to show how from that beginning the present organization of things must gradually have come about. Just so, he starts with human life in its primitive beastlike simplicity, and tries to reason out how civilization must have arisen. For the starting-point he has to work back from the uncivilized tribes de-

scribed by ancient historians and modern travelers, assisted by the analogy of the newly discovered *orang-outang*—which he regarded as being possibly a variety of man. The “state of nature” is that of a solitary brute without even permanent family ties, without language, religion, law, or morality. The lowest savages known to us represent a second stage; and above that are other typical grades of culture. Rousseau’s great problem, then, is this: to reconstruct in imagination the manner in which the various transitions were effected; how, for example, language arose, how family and tribal life grew up, how landed property came to be recognized and civil authority respected. Some of the hypotheses are worthy of the author’s shrewd and penetrative analytical powers; others are less fortunate. But in every case the fundamental assumption is the same: namely that the course of history presents a definite scheme; that the several transitions have occurred in a certain order and under a single describable set of conditions. Thus property in land is conceived to arise at a certain stage of human progress, as a result of causes which Rousseau tries to make clear. That it might arise at many different culture levels and from widely different causes, Rousseau, with all his shrewdness, did not suspect.¹ And, indeed, with his method—which was the method of his time—he could not contemplate such a possibility. Only on the assumption of a single causal sequence could his deductive procedure have a chance of substantial success. To deduce one origin of land-ownership might not be beyond the limits of human ingenuity. To deduce a dozen was altogether too much. One is reminded of Bacon’s maxim: “The subtlety of nature is greater many times over than the subtlety of argument.”

¹ Cf. R. H. Lowie, *Primitive Society*, Chap. IX.

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In fields where historical details were more abundant, the contemporaries and successors of Rousseau had a simpler but not dissimilar task. While the orderly arrangement of material took the place of deductive reasoning, the end in view was the reduction of the world's history to a unilinear plot. An enthusiastic, if not religious, belief in progress gave direction to the whole enterprise; and progress was the "education of the human race." To be sure, not all parts of the race had advanced equally. Some were where the ancestors of others had been thousands of years before. But, slow or rapid, the advance had everywhere the same meaning. It was the history of civilization as thus conceived that the idealistic philosophers of Germany undertook to reduce to a logical or psychological formula.

In times of slender but rapidly increasing knowledge the tendency to wide generalization is most strongly felt. As knowledge accumulates it brings scruples. In the case of archeology and ethnology the speculative impulse has been unusually persistent because of the continual extension of the field that has taken place. There has always been a wide border of scattered and uncorrelated facts, such as tempt men to think dangerously. Moreover, in the comparison of different cultures analogies are so numerous and often so striking, that the characteristic differences seem relatively unimportant. In the very use of such a term as "magic" or "totem" world-wide generalizations are contained; and criticism sometimes shows these to be untrustworthy. Lewis Morgan's *gens* affords an excellent example of this sort. The analogy between the totem-group, as he had found it among the American Indians, and the *gens* of ancient Greece and Rome is remarkable and most illuminating. But there is a difference scarcely less remarkable, which Morgan altogether failed to appreciate.

The young Iroquois could only change his totem through adoption. Normally a Turtle or a Wolf remained Turtle or Wolf throughout his life. But in Greece and in early Rome the woman passed at marriage into her husband's gens—in Rome she even changed her name with the transfer—so that all the members of the family were always of a single gens. This also involved a form of adoption, but it was adoption become a regularized institution; and through it the family became a far more closely unified social entity than the Iroquois family could possibly be. Writers like Grote had with perfect justice declared that the family was the fundamental unit of ancient society. Morgan refused to believe this. The unit was for him indubitably the gens, and the historians were simply mistaken.

When generalization is so loose and easy, the enterprise of tracing the course of social evolution could not lose its attractiveness. It has persisted to our own time, and gives no signs of languishing. The enterprise, be it understood, is not a merely historical one. It is essentially scientific; for its object is to discover laws of nature, a universal order exemplified in the particular instances of progress at all times and places. It is like studying the metamorphoses of a species of insects, except that more allowance is made for interfering conditions. Thus, for example, the question is raised as to which comes first, agriculture or stock-raising, and the answer is given in favor of the latter. In America, we are told, the normal order was departed from because of the general absence of food-animals fit for domestication; but a normal order it nevertheless remains. The methods of the speculative inquirer are no longer so abstractly deductive as in the eighteenth century, but the aim is not dissimilar. Rousseau's question, "How did landed property arise?" is still agitated. His

theory, that government had its origin in a conspiracy of the rich to protect their property from the unruly poor, is fairly comparable with the more recent theory, that kings are originally medicine-men.

The reaction against this sort of speculation—a reaction which is particularly marked among American scholars—is surely justified; and if the idea of social evolution is to be understood as having such a connotation it ought to be rejected as thoroughly misleading. Organic evolution is no longer interpreted in any such fashion—except by some metaphysicians and “liberal” theologians. Bergson, looking with the sympathetic eye of the interpretative artist upon the complicated history of life, endeavors to catch its fundamental drift—supposing that it has a drift—and declares it to be a groping after freedom. In the starfish and the oyster life has gone astray. Even in the honey-bee it has missed its aim. Man has, on the whole, progressed farther in the required direction than any other creature; so that in this sense the whole evolution may be said to have led up to him. But this is essentially a speculative theory, altogether of a piece with Schelling or Hegel’s philosophy of nature. The science of biology knows nothing of it.

In much the same way, we can, if we will, interpret the history of civilization as a groping after freedom—man’s slow winning of control over nature and over himself, and ultimately over the conditions of his own further development. The persistence of magic and animism, of polygamy, slavery, and caste, may then be regarded as due to more or less accidental deviations from the one central line of progress. This is substantially what we find in the metaphysical sociology of Hobhouse. Now such an interpretation may in one way or another be very instructive.

Even a false hypothesis which enabled one to embrace in a single perspective so vast an array of facts, would have a real value; and it would be only setting up one dogma against another to say that Hobhouse's theory is false. But it is radically insecure; and, furthermore, in the interpretation of detail it may easily lead us into arbitrary and indefensible positions. We have no trustworthy means of discriminating between the central and normal, on the one hand, and the accidental, on the other. Hobhouse himself falls back upon the dictates of his moral consciousness. In the long run such views are better for edification than for knowledge.

Social evolution is not one but many; or, if it be a many-in-one, that is a matter of faith or intuition, not of scientific theory. We are in no position to establish such a doctrine.

EVOLUTION AS A UNIVERSAL TENDENCY

The evolutionary conception of society received a powerful reinforcement from the triumph in the latter half of the nineteenth century, of the evolutionary conception of organic nature. The origin of species was the last great stronghold of creationism. As late as the beginning of the nineteenth century, the careful biologist could not, like the astronomer, say of an interfering Providence: "I have no use for that hypothesis." Today he has indeed no use for it. As a result, evolution has come to be looked upon as if it were an *omnipresent power*—an impersonal god of science. From one point of view that is scarcely an exaggeration. All the complexity with which we are acquainted is doubtless the result of evolution. But from another point of view it is decidedly false. Evolution (as we understand the term) is by no means universal. In the details of things it is common enough; but the opposed process of degen-

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eration is about as common. Most of the transformations that take place in organisms or in societies involve both. But the total transformation itself is relatively seldom evolutionary in its character. There is no law of progress. Sometimes things evolve; sometimes they degenerate; and often, through long periods of time, neither the one process nor the other takes place in a preponderant measure.

We get a very different impression from a hasty survey. We are struck by the succession of higher and higher forms that have appeared. In the oldest rocks the record is too scanty to afford any clear indication of the general character of the life of the times. Above a far-extending unconformity, which represents a lapse of untold millions of years, a wealth of invertebrate life is found. Then follow the first fishes; then some amphibia; then the reptiles that dominated earth and sea and sky; then the mammals and birds; and finally, just before or early in the glacial epoch, man. Has not the evolution been continuous? Perhaps; but let us reflect a little.

We have still a great many species of protozoa in the world. Some of them, like the yellow-fever germ, occasionally make their presence very forcibly felt. If there be a universal tendency to progress, how have they managed to feel its influence so slightly? A certain evolution can be made out among them; but the lowest persist as well as the highest. And even in the highest there is still no body, as distinct from the single self-reproducing cell.

Suppose, now, we ask the question, whether the metazoa of all kinds are probably derived from a great number of different one-celled forms. The answer is in the negative. However different the oyster, the butterfly, and the dog may be, the first stages of their development are essentially similar, so that it seems certain that the divergence of their

several lines of descent is long posterior to their separation from the protozoa. The indications are that all the metazoa are derived from one or a very few closely allied forms. There is no general tendency among protozoa to add to themselves bodies. It is an exceedingly exceptional strain that has done this.

There was a time when the only vertebrates were fishes. The sea is full of fish still, and promises long to remain so; yet certain fish have developed limbs and lungs, and have given rise to all the tribes of reptiles, birds, and mammals. How many species of fish have contributed to this advance? If there were originally more than one, they must have been closely related. Otherwise the universal characteristics of the reptilia—to say nothing of the warm-blooded types—constitute an altogether astounding body of coincidences.

And so we must say of the birds and mammals. These have, indeed, no common warm-blooded ancestor. The raising of the body-temperature has occurred independently in the two classes, and constitutes a genuine parallelism. But all the birds have almost indisputably sprung from a single reptilian source; and a similar statement holds true of the mammals.

“It is the same thing to say a thing once and to keep saying it forever”; but perhaps this thing will bear repeating once more. The question has been gravely debated, whether man is derived from a single species of ape or from several. This is, of course, very different from the question, whether specific differences are to be found between the various races of men now extant, or between man as he now is and any of the races of men which have passed away. Whatever be thought upon this latter point, the single origin of man is as certain as, in the absence of direct

evidence, it could well be. The peculiar modification of the lower limbs and the extraordinary development of the cerebrum, especially of the area set aside for speech—these things have not been twice acquired. The gorilla, the chimpanzee, and the orang-outang are not following in man's footsteps.

What has misled some learned investigators is a failure to appreciate the fact that all, or almost all, considerable modifications of type involve a certain amount of incidental *atavism*. Atavistic changes are produced with relative ease. It is as if they required the addition of nothing new, but merely the dropping-out of what has in the past been laboriously acquired—though perhaps the matter is not really quite so simple. Every change of any magnitude necessitates compensatory changes in other parts of the organism and if at any point a return to earlier conditions will suffice, the chances are great that it will occur.

Careful studies that have recently been made of man's likenesses and differences as compared with his nearer and more remote relatives illustrate this principle very clearly. In many respects man is more like the lower than the higher apes. His opposable thumb, for example, is not a novelty. It is the revival of a very ancient feature, which in the anthropoids has sadly degenerated. The general proportions of the human body are extremely primitive—quite frog-like, so to speak.

Now facts of this sort are very easily misinterpreted by the student of human origins. He argues that man's relationship to the gorilla and the orang-outang cannot be nearly so close as the morphologists of Huxley's generation supposed. Does not the thumb, for example, separate him from them decisively? If in man it had ever been reduced to anything like what it is in the gorilla, how could it have

regained its ancient perfection? Thus the common ancestry of man and anthropoid is pushed farther and farther back; and it may even be concluded that they have sprung from widely different branches of the monkey family.²

The same sort of thing comes to light when the different races of men are compared. Each of them has characteristics in respect to which it is more brute-like than the others. The hairiness of the European, as compared with the Mongolian or the Malay, is a familiar example, though not one which the advocates of white supremacy are fond of emphasizing. The more these characteristics are studied, the deeper the cleavage between the races appears to be, and the farther back their common origin is carried. But the true explanation is undoubtedly in line with what has been suggested above. These various brute-like characters are atavisms, which have accompanied the differentiation of the races, as other more radical atavisms have accompanied the rise of the human species.

But we must return from this digression. If evolution is so far from being a universal tendency, why are its effects so wide-spread? The answer is very simple. When a notable advance has been made, it opens up a larger sphere of existence to the improved type. This spreads abroad, not only replenishing the waste places but seizing other fields from its less fortunate competitors. Under these new conditions minor variations occur, involving evolution of certain parts of the organism and degeneration of others, often without any marked predominance of either process, though sometimes one or the other will stand out. In this way an extensive and greatly diversified class may be formed. The

² The reader should not imagine that this conclusion has been generally accepted by biologists. It is, in fact, a learned eccentricity. The biochemical evidence of the close connection between man and the anthropoids is in itself fairly conclusive.

illusion thus arises that the progress was general. Thus, for example, almost all mammals have the placenta. Formerly none had it. This does not mean that most of the mammals acquired a placenta. The movement was probably confined in the beginning to a single species. But almost all of its rivals have perished.

The like must be said of social evolution. Petty changes of one or another sort are always happening in human society, even the most stable; and many of these are of an evolutionary nature. But in the sense of a general movement social evolution is an exceptional phenomenon. Most peoples are practically stationary. They live on through thousands and tens of thousands of years, and the end of the period finds them substantially where they were at the beginning. The more advanced peoples spread abroad and displace the more backward; so that the hasty observer may suppose that the process was nearly universal. But even now, in obscure corners of the earth, savage hunters scarcely more advanced than the Neanderthal man are to be found.

We, of western European descent, have, since the beginning of the Renaissance, become so used to progress that we now take it for granted. The arrested development of Chinese civilization strikes us as a strange, an almost uncanny thing. But such arrest of development is rather normal than otherwise, and the case of the Chinese is far from being an extreme one. At every stage of progress there are societies resting where their last spurt placed them, two thousand, five thousand, thirty thousand years ago.

The evolution of the animal kingdom has been compared to the growth of a tree. The tree as a whole becomes taller, but it also becomes broader; and if we examine the direction of growth of each separate shoot, we find it sometimes upward, sometimes downward, sometimes neither the one nor

the other. It would be easy to find fault with the comparison; nevertheless it serves to convey a lesson. We may apply it also, though less perfectly, to the history of civilization. In spite of "dark ages" of greater or less extent and duration, civilization has made a fairly steady advance: the tree as a whole has grown taller. But at any time in the course of the development it is only certain branches that are growing upward; others maintain their level; and still others, overshadowed by higher growths, are actually turning toward the ground.

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CHAPTER IV

CONTINUITY AND INVENTION

WE now return to the task of making clear in positive terms the concept of social evolution. In this chapter we are to determine what is meant by the continuity of the process. With this end in view, let us begin by contrasting the theories of social evolution with another way of explaining the origin of culture,—a way which was long popular, and which is free from a certain difficulty which attaches to the evolutionary conception.

THE CULTURE MYTH

Before science arose men had a very facile way of accounting for the complexity which they found in human affairs. They attributed it to the inventive genius of wise men of old, or, in cases that seemed to them sufficiently remarkable, to a superhuman being. Thus the common law of the land was due to some semi-mythical Moses or Lycurgus or Numa, assisted by the counsels of a friendly deity. The art of agriculture had been taught by Saturn, and the culture of the vine by Bacchus. The alphabet had been invented by Cadmus. The manufacture and use of metal tools was the gift to humanity of the great Prometheus.

We are all familiar with this type of story and have learned to be very contemptuous of it. And yet there was a powerful reason which led men to cling to such stories

very persistently. How can a complex organization come into existence gradually? The mutual dependence of the parts is such that, generally speaking, no one of them could subsist without all or some of the rest. Consider, for example, the raising of wheat, and assume the position of an ignorant savage hunter. If he is to begin to raise wheat, what shall he set about first? The preparation of the ground? The sowing? The harvesting? The threshing? The saving of seed for another year? We have here a series of operations stretching over a long period of time, no one of which would have any considerable value without all the rest, or would now be performed by anybody except in view of all the rest. If we consider the further processes to which the raising of wheat is subsidiary—those involved in the making of bread—the difficulty of conceiving agriculture as the outcome of a slow evolution is increased. For wheat is raised with the intention of making bread. Is it not more reasonable to think of the industry as planned and set going as a whole by some one? And if no man could have sufficient foresight, must not a god be assumed in order to account for the facts?

Or consider the smelting of iron and the work of the smith. Why should anyone go to the trouble of digging iron ore out of the ground? Nothing is more obviously useless. Why should charcoal be prepared? Why should the ore and the charcoal be heated together? Of what use, when the iron is obtained, is a metal which, so far as one can see, can be neither shaped nor welded? Are we not compelled to admit that this industry never could have come into existence gradually, that it must have been the result of a veritable creation?

To be sure, there are difficulties attaching to the invention theory also. Where did the seed come from for the first

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wheat crop? Iron is worked with iron tools; how were such tools first procured? But if superhuman intelligence is assumed in the inventor, superhuman power can be trusted to override all other difficulties. Hence, on the whole, a clear advantage appears to lie with the theory of an abrupt beginning.

Let us note one more example, which the modern reader may, perhaps, be disposed to take more seriously. How did human speech begin? Imagine men without it, and then try to conceive how they could possibly acquire it. The baby's learning to talk teaches us nothing that is relevant; for he lives among those who already understand words and use them with the expectation of being understood. How can one begin to speak without any such expectation? And yet how can one expect to be understood if speech is not habitual? Again, the obvious difference between human speech and the cries of animals is that by means of speech we express judgments; and the predicate of every judgment is a general idea. But examination shows that we never conceive a general idea except as it is attached to some symbol; while a sound that is uttered—or, if you please, a movement that is made—does not become a general term until it is the expression of a general idea. Which, then, is first: the general idea or the general term? They form a complex unity of which neither part can exist without the other. The more men have pondered over these questions, the more unanswerable they have appeared; or, if some small group of thinkers have persuaded themselves that they had a satisfactory answer, they have never been able to persuade the scientific world at large. Accordingly, if we suppose man to have at some time existed without the faculty of speech—and the variability of languages and

the differences between them make it hard to suppose that the faculty is instinctive in the species—are we not driven to suppose that speech and reason were given to man at the same time by a benevolent deity?

Nevertheless, in spite of these and other similar reflections, we have become thoroughly convinced that the hypothesis of special providences, human or divine, is unnecessary in sociology, and that all that is complex in the phenomena of social life has come into being gradually—that is to say, by processes of evolution. And we hold to this conviction none the less firmly because in many cases the precise history and the operating causes are unknown to us. We speak without hesitation of the evolution of commerce, of criminal law, of music, of religious beliefs, of the game of chess.

How have the old difficulties been surmounted? By means of a clearer conception of what is involved in an evolutionary origin. To account for the beginnings of agriculture, we do not have to show how all the different operations, *as now carried on*, were first conceived and practiced separately and then united into a complex whole. Evolution is not an assembling of parts that had already existed either in imagination or in actual practice. What evolves is from first to last an organized whole. Thus agriculture has been from the first a complete process, that is to say, a useful industry. It happens that we now have, by a comparison of the survivals of early methods to be found in different parts of the world, a tolerably complete history of the matter, from the use of the digging-stick to the use of the power-driven cultivator and harvester. We have even learned that such expressions as “the first” are not to be too strictly taken. The boundary between the

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gathering of the fruits of the earth and the cultivation of them, like the boundary between the hunting of animals and the care and breeding of them, is exceedingly unclear.

THE LIMITS OF INVENTION

This is not to deny that human inventive genius has played a part in the process. It plays an increasingly important part as social evolution proceeds. But it never, even in our own time, approaches what might be called an act of creation. We seem not to be capable of inventing even a really new game. Basketball, as compared with hockey and association football, or the original bridge, as compared with whist, are fair illustrations of the utmost degree of novelty that is to be found. An old story has it that chess was invented by the sage Palamedes as a pastime for the Greek chieftains who took part in the long siege of Troy. If chess had, indeed, ever been invented, it must have sprung from the brain of Athena herself rather than from that of the most ingenious of mortals. But it was never invented; it grew. In early modern times the power of the chess bishop was not what it is now. And even after all the rules of the game were fixed as at present, the game could still develop; and in the course of the nineteenth century the development was extraordinary, as remarkable in its way as that which was undergone by the sciences of chemistry and geology.

Not long ago men thought of the American Constitution as the outcome of the labors of a certain convention, supplemented and modified by certain amendments adopted on various later occasions. We now know that this is a very small part of the truth of the matter. On the one hand, industrious historians have traced for us the origins of the

Constitution in the civil institutions of the colonies and the mother-country, until it appears as if the great document had not much more novelty in it than the game of bridge. On the other hand, other learned investigators have pointed out that what was really novel was not in the document at all, or was not suspected of being there by those who drew it up or ratified it. Potentialities were there, such as the annulment of acts of Congress by the Supreme Court, which soon came to light, and others, like the extension of the powers of Congress under the interstate-commerce provision, which have more slowly become plain. The actual development of the Constitution is only in very small part recorded in the formal amendments. It is written in part in the decisions of judges, in part in the traditions of the bureaucracy, in large part also in the growth of institutions which lie outside the scope of what is commonly regarded as constitutional law, and which even the ordinary laws touch only in an external way: the great political parties. Not from the lawyer's standpoint, but from the sociologist's, the two-thirds rule of the Democratic national convention is as much a constitutional provision as the two-thirds rule for the approval of treaties by the Senate.

There are thus two respects in which the part of intelligent invention is limited: in its ability to conceive what is new, and, more importantly, in its ability to conceive any but the most immediate effects of the changes which it introduces. For the magnitude of the intentional modification may be as nothing compared with that of its unintended consequences. It is easy to suggest that in chess the position of the knights and bishops should be interchanged; but it would require the systematic analysis, as well as the actual match-play, of a generation, before one could more than begin to realize what this apparently

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trifling alteration involved. To be able to see a little way in advance would make a man for the time being the champion of champions. It is so with the modification of military tactics that was involved in the introduction of poison-gas and the tank. If the German commanders in 1915 had been able to anticipate even approximately what the potentialities of the gas-attack were, the war was in their hands. They had only to continue their preparations for a few months and then sweep the Allied forces from the face of the earth. But no, they could not see so far ahead. They had to try the new weapon out; the consequence of which was that as the offensive developed the defensive developed also, and the chance for an overwhelming superiority was lost. It was much the same with the tank, except that in this case the genius of Foch did succeed in seeing a little way ahead, and the swift and continuous success of his great counter-offensive was his reward. Meanwhile what the principle of the tank may have in store for the tactics and even the larger strategy of future wars is left for the future itself to determine.

These examples have been chosen to illustrate the part of invention at its greatest. No great social change was ever carried through under intelligent control, according to a preconceived plan. None of the complex activities and standards and institutions of human societies are creations. They are all products of evolution.

PERMANENCE IN THE MIDST OF CHANGE

Forty years ago, while the controversy which the publication of Darwin's theory precipitated was still raging, the partisans of evolution, like partisans in general, were prone to exaggerate the differences which separated them from

their opponents. "All things flow, nothing abides," might have been their watchword. At such times the concession of even a partial truth to the other side is regarded as a sign of weakness. That source of error is now removed. There are in the field of biology no "evolutionists," because there are no anti-evolutionists; and the investigator is as willing to see, and as interested to find, examples of permanence as examples of change.

The same thing has happened in the field of social theory, and especially in that of ethics. The dogma of the invariability of moral laws was as strongly intrenched as that of the invariability of natural species. Consequently the first aim of the evolutionary ethicist had to be to establish the fact of moral change. The standards of justice and benevolence were represented as being in constant movement with the change of social conditions, and especially with the enlargement of knowledge and sympathy. Even now for certain French sociologists morality is a body of prejudice which must be accepted simply as a matter of historical fact—the more so since, in spite of his own illumination, the critical scholar can not help but share the prejudice. That lying is wrong means, according to this way of thinking, simply that in the society in which we happen to live lying is felt to be wrong. This feeling has not always existed and does not exist everywhere now; and where men feel differently the standard of veracity, as we know it, has no validity.

All this is true enough for the purposes of controversy; that is to say, it is half-true. Among those to whom moral evolution is too familiar a fact to need demonstration, the extraordinary persistence of moral values is a phenomenon calling for the most candid recognition. To convince ourselves of the fact we have only to read the poems and legends

that have come down to us from the bronze age. With Homer as our guide we step back three thousand years, and find ourselves at home—almost. Who could be more real to us than Hector? Is there a trait of his character, good or bad, that is foreign to us? Is there an act that he commits, a phrase that falls from his lips, that is remote from our sympathetic understanding? It is hard to believe that there is. The tragic power of the narrative is still too great for much of its moral basis to have been lost. The chiefs who fought at Troy are even today a revelation of humanity. Or, if we fear that this may be an illusion created by poetic genius, we have only to turn to the book of Genesis or Judges to find that the fear was ill-grounded. The story of Joseph and his brethren, as we have it, is a badly muddled combination of two distinct versions; but its essential truth to human nature is manifest.

It is important, however, to mark a certain distinction between types of permanence. On the one hand there is mere absence of change, as we find it through long periods of time in the nomadic tribe or the village community. On the other hand there is the permanence which is essential to evolution itself.

For the possibility of evolution depends upon the fact that change is not unrestricted. Great as the modifications may in the course of time become, at any particular time they are, in general, superficial in comparison with what is unaffected. And even after the profoundest and most extensive changes have been consummated, there remain always elements of unbroken identity. The most striking example of this is the cellular structure of all plants and animals. It has, indeed, been argued, that the epithet "unicellular," applied to the protozoa and protophyta, is self-contradictory: that the organism cannot be said to have

a cellular structure unless it consists of a number of distinct units, and that organisms of which this is not true ought rather to be called "non-cellular." There is a certain force in the contention, but there is little prospect that the present usage will be given up; for this usage serves to emphasize the fact that the units of the complex organism are constructed upon the same general plan as the simplest entire organism. We may say that the complex organism is a colony of cells, except that it has acquired a unity such as the agglomerates commonly called cell-colonies do not possess. Its cells are differentiated for the performance of distinct duties, while, as they lose their primitive power to perform other functions, they become closely dependent upon one another for the maintenance of life. Thus, while it is obvious that the higher plants and animals represent a great evolutionary advance upon the one-celled forms, it is equally obvious that throughout the advance the original design has been preserved.

Little reflection will be needed to convince the reader that the moral identity which we feel with Homeric warriors or semi-nomadic Hebrew shepherds is of this kind. A great advance has taken place, but there are fundamental traits that persist virtually unchanged. Hence we can sympathize freely with them; but if we could try the experiment of asking their sympathy for moral scruples of our own, we should be likely to find it wanting. Such questions as that of the relative rights of capital and labor would leave even Ulysses puzzled and cold.

A fine old song, long antedating the rise of modern music, is "*Malbroeck s'en va-t-en guerre*," or, as our college boys sing it, "He's a jolly good fellow." Richard Strauss and Debussy belong to the same tradition with that simple, charming melody. No one who was insensible to its beauty,

or to the beauty of hundreds of other folk-songs as artless and as inevitable, could have more than a sham appreciation of the great modern masters; though the converse would not hold: that no one who could not enjoy Strauss and Debussy could appreciate the folk-songs. The educated musical taste of today contains the older, ruder taste as a living element within itself. And if the folk-songs are analyzed they are found to consist of musical phrases, just such as make up the greatest compositions, based upon the same harmonic intervals. Throughout the whole development, which has been one of the marvels of these four marvelous centuries, the elements of music have remained substantially what they were.

The same appears to be true in principle of processes of degeneration also. There is, to be sure, such a thing as swift and sudden disaster, in which a whole complex social organization is destroyed; as when, in a barbaric invasion, the adult males of the conquered people are put to death and the women and children are led into slavery; though even in such a case there must always be survivals of customs and ideas. But, setting aside such destruction, we may say that, as a rule, where life persists what is most ancient and fundamental persists also. One consequence of this is that degeneration often has the appearance of *atavism*, a return to the simplicity of an earlier day. This may be caused by poverty and isolation. It may also be caused by successful militarism. The Spartan state seems to be a typical example of *parasitic degeneration*. This people had fastened themselves upon the Helots, a numerous and not ungifted population, and all their habits of life were accommodated to the necessity of maintaining their grip unshaken. Not only had the Spartans no share in the political, artistic, or scientific development of the Greeks;

but some of their most characteristic institutions, ascribed by the ancients to the strange inventive genius of **Lycurgus**, are recognized by the modern ethnologist as reversions to more primitive conditions. Yet amid it all the Spartans remained Greeks of the Greeks, and there was never any question of their full recognition as such by other members of the race.

THE NECESSITY OF CONTINUITY

There is such a thing as being prepared for a social change—even for being reduced to slavery. The more primitive peoples have a habit of dying off when they are enslaved. What men are determines what they can become. What they possess sets a limit to their power of appropriating what is presented to them. The Hawaiians, who could so successfully appropriate the “gospel hymn,” would have been simply dazed and confused by orchestral music, or would have carried away from it only scraps of melody on the gospel-hymn level.

Anthropologists are often at a loss to determine whether the presence of a given culture-trait is due to diffusion or to the operation of independent causes. The alternatives are not wholly distinct: it may well be that a similarity in other related conditions favored, or even made possible, the diffusion. For no people shows a disposition to borrow everything that is brought to its notice. Indifference or contempt is very common. What is borrowed is what seems good; and whether a given practice seems good or not is a matter of taste, that is to say, depends on previous training. There are certain well-known taboos upon private and familiar intercourse—between mother-in-law and son-in-law, for example—which have spread by diffusion over

wide areas. But in the neighborhood of affected peoples we find others that have no such taboo and regard the very notion of it as ridiculous. Why has the diffusion stopped just there? It has been observed that the peoples which share a particular form of the taboo resemble one another in their marriage and incest laws, and that, as a rule, the taboo applies only to persons between whom sexual intercourse is regarded as incestuous.¹ There can be little doubt that this resemblance has materially facilitated the borrowing of the taboo.

Few social changes occur without meeting with a more or less serious resistance. A new food-stuff, however appetizing it may be, has to overcome in us a certain reluctance even to try it; and when we try it many of us find it objectionable just because it is strange. Few social changes of any magnitude are quickly carried through. Conquest may be swift; but it may result in little more than the setting-up of a viceroy in place of a king. The expansion of the state to include the conquered territory—the winning of the people to a new allegiance and the familiarization of them with a new legal system and a new bureaucratic tradition—takes time at best. Furthermore, in very different degrees, social traits are connected with one another, so that as a change in one proceeds it brings about changes in others. As a rule, changes take place more easily in traits that are isolated, that is, that can be modified without entailing any considerable modification elsewhere; for there is just so much less resistance to be overcome. Now these are, generally speaking, the *more recently acquired* traits. The older ones have become a basis to which later acquisitions have been accommodated. To dislodge them from their long established position would

¹ Cf. R. H. Lowie, *Primitive Society*, Chap. V.

involve a wide-spread dislocation of intimate connections.

We can, perhaps, better appreciate what the ordinary course of affairs is, if we consider what sometimes happens, when, under the operation of extraordinary causes, the natural conservatism of a people is seriously broken down, and they are swept into radical changes in their most fundamental beliefs and practices.

The contact of European civilization with primitive peoples in all parts of the world is very instructive in this regard. Satisfied as these peoples may have been with their own way of life, they cannot but be impressed by the extraordinary powers of the whites, who easily acquire in their eyes a position of great prestige. When they think it possible to gain for themselves any part of the white man's powers, their covetousness and ambition are strongly excited. And though in many ways they find his actions and preferences altogether irrational and fantastic, in other ways he sets the fashion and they are proud to imitate him.

The effect of Christian teachings upon primitive peoples has often been observed; and the candid reports of witnesses have roused the indignation of pious readers, who thought that the truth and virtue of their religion were being called in question. Melville in *Typee* contrasted the miserable condition of the converted natives of Tahiti with the felicity of the as yet uncontaminated inhabitants of a certain valley in the Marquesas, where he had been for some months a prisoner. The same phenomenon, greatly intensified, may be observed within the Arctic Circle.

Even in such a case the change is less profound than the superficial observer suspects. The Christianity of the convert is not that of the missionary. Not only do many of the old superstitions continue in full force—in secret rites, kept hidden from the whites. The dogmas and cere-

monies that are learned from the missionary are interpreted according to the analogy of the old religion. The prayers, for example, are charms, and are valued for the very definite results which are expected to flow from the repetition of them. But, imperfect as the conversion necessarily is, it may go far enough to unsettle a whole moral economy. Right and wrong is for primitive man essentially a matter of custom, enforced by religious and magical sanctions; and the interference caused by the new religion and its associated magic weakens the only motives which the convert has ever felt for much important self-restraint. Important elements of technical culture are also endangered; for the processes—for example, the preparation and administration of native medicines—may be inextricably entangled with religious features. In fact missionaries have sometimes found it necessary to forbid their parishioners to have resort to the medicine-men in cases of illness, even though the skill of these practitioners in the treatment of certain ailments was unquestioned. To undergo the treatment implied a renewal of association with the old heathen rites, with grave danger of apostasy.

The characteristic error of democracies is to suppose that laws can be freely made at the caprice of the majority. Passing a law does not make it effective. Our statute books are filled with measures that no man of common sense would now dream of attempting to enforce. Even the acts of Congress may be dead letters, not because of any unconstitutionality in them, but because there is no possibility of applying them with reasonable consistency to actual conditions. A statute is essentially a modification of custom; and in order that it shall be enforceable it must be in general accordance with the great body of custom to which it becomes attached. This is notably the

case with constitutional law, as the history of revolutionary France, and, even more strikingly, the history of various Spanish-American republics illustrates. It is well for us that our own constitution had abundant sources in the political life of the American colonies and of the mother-country. You cannot give a nation a better government than it deserves, though you may give it a worse; and this country was fortunate to deserve so good a government as the constitution provided.

The law in its progress, when the progress is not illusory, is exceedingly conservative. It clings to what it has and is; and it clings most tenaciously to those conceptions of property and contract, injury and crime, in which the legal standards of civilized man have their origin.

CONTINUITY IN THE HISTORY OF SCIENCE AND OF ART

It must be remembered that the antiquity of a trait is merely an indication, though on the whole a pretty trustworthy indication, of the degree in which it is to be regarded as fundamental and hence resistant to change. Exceptions are numerous. Thus, in the advancement of science, it sometimes happens that a new generalization, bringing together results that have been obtained in many different fields, occupies at once a position of commanding importance, from which it could not be dislodged without the most widespread consequences. However, the characteristic phenomena of historical continuity are in this field also easily observable.

One popular mistake—though it has often been pointed out by writers on logic as well as by writers on the history of science—which may still for some minds obscure the continuity of scientific progress, is to suppose that science

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advances by simply dropping detected errors and adding new truths to the given store. There are indeed such things as errors of observation. There are also such things as lies and impostures which deceive the scientific world for a season. In such cases it is fair to say that the mistaken views must simply be given up as soon as further evidence condemns them. But these are extreme, not typical, cases. Generally speaking, an error is a partial or approximate truth. It was an error to suppose that the binomial theorem holds for all values of its variables. It was an error to suppose that water is incompressible, or that the specific heat of a substance is unaffected by its temperature. But such errors as these have an element of positive value, which their utmost refutation does not nullify.

All our theories lie under the disabilities imposed by the narrowness of our experience. Our habitat on a portion of the land-surface of this planet is a scanty base for theories of universal application. Our senses, even when aided by ingeniously devised instruments, have their limit of acuity and their limit of distance. Our habits of thought and the concentration of our interests, while they make us quick to observe some things, blind us to others which are equally at hand. It is inevitable that our knowledge should bear the impress of our ignorance. In a general way we can acknowledge our fallibility and be open-minded to correction. But at a given time we must shelter our theories as best we can on the basis of our actual experience. Hence it follows that we are continually affirming as exact and universal truths propositions that are only approximately true, or that are valid only within limits which we do not yet perceive. Now when with enlarging experience we become aware of our error, the old proposition is not simply dropped, or need not be. Generally speaking

it is retained as an approximate statement, or as a statement, holding good within certain limits. Water is incompressible—for most practical purposes. Specific heat is invariable—for all ordinary temperatures. The binomial theorem is valid—if the series which it yields is convergent. Even after a great scientific revolution, such as the substitution of the sun for the earth as the center of the system of planets, more of the old view is left behind than at first sight appears. The remarkable determination by Copernicus of the relative distances of the various planets from the sun was merely a reinterpretation in terms of his own system, of constants long ago calculated (but differently interpreted) in connection with the Ptolemaic system. In spite of the revolution, the new astronomy was continuous with the old.

Recently, when radioactivity was discovered, it seemed to many for a time as if the very foundations of modern science had been unsettled. The first reports, indeed, were received with reservations and sometimes with unbelief, not because in this age of the world we are skeptical of strange things, but because in this case the limits of a reasonable credulity were fairly reached. When the reports were confirmed a furor of speculation and experimentation arose in the effort to solve the mystery. Shortly, as a result of this intense activity, a new order began to appear; and then it was remarkable how little of the old orthodoxy had been given up. The law of the conservation of energy, which had been thought endangered, remained unimpaired. The absolute fixity of the chemical elements had, indeed, to be given up; but this, since the discovery of the curious “periodic” relation between the atomic weights of different groups of elements, had been more or less under suspicion. On the other hand, some hitherto baffling irregularities were

now straightened out. Lead from different sources showed slightly different atomic weights. How could this be? Radium and mesothorium (the "radium" used on luminous watch-dials) have identical chemical properties. If mixed together they cannot be separated, except as their differing rate of radioactivity separates them. It is now assumed that lead is such a mixture: that instead of being an element it contains several elements which are chemically indistinguishable; and that the varying measurements of its own supposed atomic weight are due simply to the varying proportions of the mixture.

The successive modifications by which the advance is effected are at all times small. In the case of such major contributions as the invention of the infinitesimal calculus, which to a first view would seem to be a great leap forward, a closer examination shows that such ample preparation had been made that little remained to be done. In this particular instance the independent and simultaneous accomplishment of the decisive step by Newton and by Leibniz seems scarcely to be wondered at. The wonder is that Wallis or Fermat had not done as much before.

Macaulay in a well-known passage (in the essay on Dryden) has cited examples like this in order to prove the slightness of the difference between great and common men; but they prove nothing of the sort. The world would have gotten the infinitesimal calculus if both Newton and Leibniz had died in infancy; but it would not have gotten it from common men. What the examples go to prove is that the extraordinary and conspicuous discoveries are only the final result of a multitude of lesser contributions to knowledge—a generation's growth coming to flower; and that even from the greatest of mankind more than this is not to be expected.

It may, perhaps, be objected that the progress of science is continuous, and necessarily continuous, only because it is logical: that conclusions cannot be established till the premises have been secured. Something of the same sort might be held to apply to technological and industrial progress; for example, to the gradual perfecting of the application of the turbine principle to the utilization of water-power—an accomplishment which is perhaps destined to be the salvation of the civilized world, but to which so many men have contributed that not one is famous for it. But it is not difficult to show that in the fields most widely removed from logic analogous phenomena are to be observed. The history of music would, perhaps, illustrate this most convincingly. But many readers know little of music, while all are more or less familiar with poetry. Let us, therefore, briefly consider English versification.

Here, one might suppose, is a field in which novelty would run riot. The variety of possible meters is incalculable. Why should not the fashions in verse be forever changing abruptly and capriciously? Surprising as it may seem, they are not. The changes are often rapid, but they are almost never discontinuous, and the exceptions are more apparent than real. The development of dramatic blank verse in Shakespeare's time is typical. In his earliest plays, as in those of Greene and Marlowe, nearly every line is *end-stopped*, that is to say, the end of the line coincides with a break in the sense; and the verse endings are almost all *heavy*, the last accent falling upon a more or less emphatic monosyllable or upon a stressed syllable of a longer word. (The last syllable of words like *holiness* and *cardinal* received a secondary stress.) In the latest plays overflows are frequent; sentence-divisions occur freely almost anywhere in the verse; light endings are no longer

rare. The separate lines are organized into a new unity on a larger scale, in which the significant rhythms of prose are superimposed upon the formal verse-rhythm. The contrast could hardly be more striking. But between the earlier and the later manner the continuity of the transition is unbroken; and within the space of a few years the change is not easily perceptible.

Why should not verse like that of *The Tempest* or *A Winter's Tale* follow immediately upon that of *A Midsummer Night's Dream*? If, for the sake of argument, we suppose Shakespeare somehow inspired to pass over the intervening distance at a bound, he would have to show his company of actors how to follow him; for the new meter requires a very different rendering from the old. It is true that as one becomes used to Shakespeare's later manner, the lines seem to flow with the utmost simplicity and naturalness; but the actor who passed to them abruptly from a training limited to the earlier style must inevitably have made of them either uncouth verse or wishy-washy prose. And there would still remain the public ear to be educated, and it is the public, after all, that the lines must reach. But the assumption is an unreal one. When the successful poet writes he is addressing his public; he is, if you please, spiritually in contact with it; and the forms of art which he employs are, though in different degrees, their common possession. It is not simply that if he wrote differently he would lose his admirers. It is that his lines come to him in the forms which belong to him in common with them.

The apparent exceptions to this statement are such as to make its essential truth only the more manifest. Sometimes a poet, separated by accidents of fortune or by peculiarities of personal character from the society of other

men of letters, becomes an eccentric in his verse. Not uncommonly such a man writes in a style a century old, and in rare instances he does it surprisingly well. He may have appreciative readers among those who have a taste for the quaint and the old-fashioned. But he is and remains an oddity, and his impress upon the literary consciousness of the time is practically *nil*. It is as if he had indeed written a century or more before. Sometimes the eccentricity takes other forms, but the effect is analogous. A man of force and intelligence may get himself well enough known to be parodied or even seriously imitated; but the public taste remains unaffected. The learned poet is in a similar position. Few men have had a finer ear for the simpler forms of verse than Longfellow, and he made several attempts to naturalize in our language foreign meters which he thought appropriate for his purposes. Of these experiments the most important is *Hiawatha*. Its meter, the trochaic tetrameter, is far from being wholly novel; but it had never before been used in the same way, unrhymed and unmixed, in a long English poem. The enterprise met with a certain measure of success. Never was anything so abundantly parodied, and certain parts of the poem have become a children's classic. But no one then or now ever dreamed of writing in that meter another independent poem. The greatest success of this sort that ever was known in the world was doubtless that which came to Horace. The beauty of his odes, composed for the most part in meters which had hitherto been used only in Greek, is undeniable. They are a treasure and a delight. But Latin verse as a whole was more or less exotic. Horace had not a spontaneous native taste to contend against.

How, then, can taste ever change? For, if the poet is bound to his public, the public must surely wait upon the

poet for its education. We need not attempt to answer the question here. It is really the problem of social evolution generally. Bound together as we all are, it might well be wondered how we can move at all. Often enough, let it be remembered, we can not. But here let us be content to assume that we do move, for our present concern is simply to insist upon the inevitable continuity of the change. Whether nature can make leaps may be regarded as doubtful; but society can not.

If now we consider once more the advancement of science, we can not fail to see that the continuity there has substantially the same ground as the continuity of artistic change. The logical character of science is not what is especially responsible for the phenomenon; for though that necessitates a certain continuity in the intellectual development of the individual, why should it do so for the scientific world? Why should not the gifted individual elaborate and work out his problems in entire isolation, and then, when his task was finished, confer the results upon society as an unexpected and magnificent gift? In such a case would not the change, from the social standpoint, be altogether abrupt?

This last question must certainly be answered in the affirmative; but the others require a little caution. Mere logic, so far from enforcing continuity, sometimes gives rise to an appearance of just the opposite. Descartes's *Geometry*, for example, is the outcome of a single happy thought, which he applied with such amazing cleverness and fertility that in a few months he became the ablest mathematician of the time; and the results were given to the world in a well-rounded, systematic form. But the directions in which Descartes applied his new method were

determined by scientific problems which he, for the most part, did not originate; and when the *Geometry* was published it came to the world as satisfying a seriously felt need. In one sense he had forged far ahead of his contemporaries; in another he was still in intimate contact with them.

The fact is that in our thoughts, as in our creative impulses, we are members one of another; and not least so when we think ourselves most independent. We think in terms in which we have learned to think. We may differ from our fellows, but we are scarcely less bound to them than when we agree. Society remains the all-comprehending Brahm, "the doubter and the doubt." Of this Descartes himself is the illustration *par excellence*. It was his great ambition to set physical science upon a new and secure foundation, which in the centuries to come would never have to be disturbed; and this foundation he proposed to lay by his own unaided labors, thinking that in this way a far better result might be secured than if a number of minds, however able, should mix their efforts in the work. To this end he undertook his famous "universal doubt," which was to embrace everything that could possibly be questioned, in order that he might be left with a residue that was absolutely certain—as certain as the axioms of geometry were then conceived to be. How far he was from success in this enterprise is notorious. A list of the conceptions which he employs with entire confidence in their perfect clearness, and of the principles to which he appeals as being manifestly true, would constitute a bitter satire on human presumption. Let one specimen suffice. The cause of an idea, he declares, must have at least as much reality, considered as an independent thing, as the idea itself has in its capacity of object of consciousness. It

matters not for our present purpose whether this principle is true or not. Indeed the question of its truth or falsity is not one that the present-day student regards as susceptible of a definite answer. It can not be so much as clearly understood. We have learned not to think of reality as a property which different things possess in equal or unequal amounts; and we have become convinced that "cause" is, of all the conceptions of science, one of the vaguest and one of the least capable of serving as a term in a proposition of fundamental importance. Descartes belongs as decidedly as any man to his own day and generation.

It may be added that just in proportion as scientific work *does* diverge from the thought of the time, there is danger that it will be unappreciated and without effect upon the time. It was not simply because Mendel's experiments on heredity were published in an obscure journal that they remained obscure. The journal was no less obscure when they were "discovered" and highly prized. It is because, as the phrase is, the time was not ripe for them; and it was only when others had been led by their own researches to similar conclusions, that discovery and recognition came.

Let us bring together the outstanding results of this discussion. (1) Continuity remains unbroken in the history of culture, not because invention is a negligible factor, but because the part played by invention is subject to a double restriction. Human imagination clings to the familiar; and the outcome of our suggestions easily outruns our utmost foresight. (2) Evolution is not incompatible with permanence; in fact a certain kind of permanence is essential to evolutionary change, namely the persistence of the more elementary and fundamental traits. Change

takes place more easily in traits that are relatively isolable, *i. e.*, as a rule, traits the origin of which is comparatively recent. (3) This applies to the acquisition of culture traits through diffusion. There is resistance to the introduction of novelties, and their successful incorporation indicates a certain adaptedness to older institutions and practices. (4) Finally, the history of science and of art exhibits a continuity based upon grounds essentially similar to those obtaining in other departments of social life.

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CHAPTER V

CONSERVATISM AND RADICALISM

ALL social changes may be regarded as changes in valuations. The things that are done, the ways in which they are done, the forces and materials that are employed, are in general those that are regarded as best worth the pains. When things are done differently, it is because it is felt that they are better done differently. This is as true of the worst features of life, in so far as they are characteristic of a society, as of the best. The criminal and delinquent class has its standards. Its members have their aims and methods and scruples. Their ways of life, while far from ideal even in their own eyes, are on the whole those which strike them as the best available. A new mode of crime implies a modified estimate of alternatives.

The consequence is that in social changes in the most widely divergent departments of life curious resemblances of type are to be found. These are, to be sure, very abstract, lending themselves to an endless variety of specific forms; yet the analogies are sometimes so suggestive as to be well worthy of examination. Among the most widespread phenomena are those connected with the *strife of parties*, favoring and opposing change. Such conflict is by no means confined to changes which in the prevailing acceptance of the term can be called evolutionary; but without some examination of this topic the conception of social evolution would remain far from adequate.

THE CONSERVATIVE ATTITUDE

Let us consider a certain change in moral standards which has recently been going on and is even now continuing. That the "divorce-evil" is an evil few among us are inclined to dispute. The great majority are agreed that a life-long monogamy is the most desirable form of sex-union, and that every departure from this standard is to be regretted. But the question has been raised, whether the frequency of divorce is itself the evil or only a symptom of the real malady, and whether, when marriage is robbed of mutual affection and confidence, it is not a mere nuisance, productive of no real good either to the parties themselves, to those dependent on them, or to society at large; and there has been a rapidly increasing disposition to answer it in the affirmative. In conformity with this sentiment, there has been a widespread liberalization of divorce-laws and, at the same time, a very great increase in the number of divorces; and even where there has been no recent change in the law the divorces have nevertheless multiplied.

How does the public attitude toward divorce differ from that which was prevalent two generations ago? There were unhappy marriages then. Why did they not give rise to the same questioning? In narrow circles they did, but public opinion was still practically unaffected. The attitude toward one who had made an unhappy marriage was this: either it was his fault, and it was for him to correct the fault or pay the penalty; or it was his misfortune—and, though you may pity him, you can not hope to eliminate all misfortune from the world. No suspicion was cast upon the justice of the established order. The evil was regarded as merely occasional and particular.

This is the attitude which is called *conservatism*, the

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taking of the world as one finds it. It is the attitude of calm good-sense and worldly wisdom. Most of us are conservatives on most of the issues of life; and it is well that we are, or confusion would be worse confounded. The perfect literary expression of conservatism is found in the plays of Shakespeare, and especially in the great tragedies. These are dramas of personal character—of ambition, weakness of will, jealousy, pride, and passionate love. It is the faults of individuals that bring about the catastrophe: if the men had been different, all would have turned out well enough. There is no suggestion of any wider and more profound difficulty, except by way of a tragic sarcasm. When Hamlet cries:

The time is out of joint; oh, cursed spite
That ever I was born to set it right!

he is intended to reveal, as in no other way he could more impressively reveal, his own essential weakness. For strong men the time is always right.

How is the conservative attitude ever modified? When one comes into opposition with it, it seems utterly immovable, an amorphous mass of stupidity and prejudice upon which argument spends its force in vain. For the conservative may even admit the evils against which his adversary protests. In the particular instance he often feels them the more keenly of the two. He may be generous to the poor, the sick, the friendless, not only with his substance but with his personal aid and his warm sympathy. But his social standards remain unaffected. Above all, the distinction between right and wrong remains for him immune from all criticism and amendment.

So it was in the matter of divorce. The public con-

science, reinforced by the most deeply revered religious tradition, entertained no doubts. If a woman had a brutal, lazy drunkard for a husband, that might well be a warning to other women to use more discretion before entering into wedlock. Her own choice was none the less definitive. If she was a mere girl at the time of her marriage, her parents should have looked out for her, and she should have been guided by their advice. If the man's faults were of later growth, she was probably in part responsible for them. In any case there could be no question of modifying the general rule in order to suit the convenience of a particular individual.

RADICALISM AND PARTY STRIFE

The stability of this attitude has been disturbed in two ways which we can distinguish. In the first place, the religious basis of the traditional standard has been weakened. There has been an increasing disposition to disregard the literal teachings of the Old, and even of the New Testament, with respect to the proper conduct of life. Times have changed, and even pious men have felt that the articles of the Mosaic law or the words of Jesus himself were not to be taken too strictly in their application to present conditions. It may be surmised, however, that this influence has not been decisive in the matter. What has happened is not so much that a weakened respect for the Scriptures has given loose rein to divorce, as that the new tolerance of divorce—as well as of many other things which the Scriptures condemn—has weakened the authority of the book.

In the second place, certain social changes have occurred which have the result of making serious discontent with the married state more common, especially on the wife's part.

It was not that husbands were worse than they had been before; it was that wives demanded more. There has been a rise in their standard of living. They were not content to submit to conditions which their mothers would have regarded as regrettable necessities. This change is itself a part of a much larger movement—the extension of democracy and individualism in the nineteenth century. Into its causes we cannot enter here; that would lead us too far afield. Let us rather look back to its effects upon divorce.

As unsatisfactory marriages have grown in frequency, it is more than a quantitative increase that has occurred. In the social world considerable modifications of number or size almost invariably imply qualitative modifications; and it is so in the present case. The failures in the application of the accepted rule of life could no longer be set down as merely external to it—as exceptions which were due to disturbing conditions of which no general rule could take account. They were regarded as failures of the rule itself, to be charged against it as evidences of its imperfection; and the demand for reform became general.

Thus in opposition to the traditional conservatism arose a new *radicalism*—no petty intellectual fad, but a national and international movement. We are still in the midst of the struggle between the two great parties; for while the radicals have gained much ground, by no means all that they have gained is assured. Most men would say that some of the American states have gone too far and that a reaction is called for. It cannot be said that any sufficient basis of compromise has been found. The general moral principle, that where relations of mutual tolerance, if not respect, have become manifestly impossible, it is wrong to insist upon maintaining the forms of marriage, would by

many be said to be established; but even this is widely denied.

One great difficulty lies in the fact that every remedial change has effects lying beyond the intentions or expectations of its authors. The established rule has its shortcomings; but it also has its advantages, which are not clearly realized until it has been tampered with. When marriage is very definitely for life, it may not, indeed, make young men and women more careful in entering upon it—such motives operate very weakly upon the vast majority—but it certainly has the effect of inducing them to make the best of the situation after they find themselves in it; and a disposition to make the best of things is a prime condition of peace and harmony. When the possibility of divorce is vividly realized, not as a last resort to be turned to in a rare extremity, but as an almost normal incident of ordinary life, there is the more danger that serious discord will arise. Easy divorce thus tends to exaggerate the evils which it is designed to relieve.

The problem is thus far from being a simple one. It is a case in which, as the old phrase runs, "there is much to be said on both sides;" and the solution that is required is a settlement between conflicting motives and tendencies. The problem, accordingly, is not one that can be solved in advance, on the strength of abstract principles. It must be solved, as well as may be, in the same way in which other such problems have been solved in the past: by the long process of social trial and error. Some day, no doubt, a new working-rule will be fixed upon; and then it will not be long before this is regarded as an essential part of the legal and moral structure of society.

When that day comes, the relations between husband and

wife will, we may expect, be greatly changed; for even in the present transition the reality and direction of the change are already evident. Marriage in a democratic and individualistic society is bound to mean something more than it did in an aristocratically organized society, in which the wife was definitely an inferior. An alliance between self-respecting equals is a more difficult and hazardous, but, where it is practicable, a more valuable form of union than the subjection of one party to the other. And there will no doubt be further effects, such as we can now hardly estimate. The wife of equal authority with her husband will have equal responsibility. What this will mean in the economic world, to go no farther, it is difficult clearly to conceive.

The same general features which we find in this example are repeated over and over again, without end, in all departments of human interest and activity. They may be briefly stated as follows:

1. The point of departure is a standard accepted virtually without question, as if it were a part of the permanent natural order of things. It is viewed either as constituting an end in itself, or as an irreplaceable means to such an end and thus as in practice cohering with it. Any disappointment incident to the application of the standard is regarded as due to external disturbing causes, and not as in any way affecting its validity.

2. Either the end which the maintenance of the standard actually subserves or the conditions under which this end may be attained are modified; and as a result the frequency of failure and disappointment is markedly greater. The failures can no longer be set aside as merely occasional, but are recognized as signifying a defect in the standard itself. A demand thus arises for the modification of the

standard, as a means to an end which it imperfectly accomplishes.

3. A conflict between conservative and radical tendencies is thus produced. The conservatives, partly from inertia, partly from awakened critical appreciation of the standard as well as of the disadvantages of hastily proposed amendments, cling to the old ways of thinking and acting. The radicals, bolder in temper and more willing to trust to logical conclusions, urge the adoption of some change which seems to them to be obviously called for; though later experience often shows that the premises from which they argued were altogether too narrow. Thus a confusion, amounting sometimes to an apparent anarchy, results, as one effort after another is made to institute a satisfactory settlement of the difficulty. Men, as their bias differs, exaggerate different aspects of the matter.

4. Out of this confusion a new order eventually emerges. Not by logical reasoning alone—though that may enter to any extent—but through experience of the satisfactory or unsatisfactory consequences of various alternatives, a settlement of the conflict is effected. Critical opposition is thenceforward confined to an unimportant minority, and the new standard has definitely taken the place of the old.

An important half-truth contained in this description is the maxim of evolutionary theory, that *the end precedes the means*, or, as it may be otherwise expressed, that *function comes before structure*. This principle has an applicability that extends far beyond the limits of social science. Locomotion and digestion, for example, are far older than the oldest special organs or tissues of locomotion or digestion. In the social domain, war is older than armies, the cultivation of the soil is older than the plow, clothing is older than cloth. But the principle is only a half-

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truth. It is not simply that before the special means in question arose, other means, more simple and general, subserved the same end. The introduction of new means generally produces some modification in the end itself. It may be a relatively unimportant enlargement or contradiction; it may be a profound and revolutionary change.

PARTY STRIFE IN SCIENCE

We have observed, perhaps unnecessarily, that the resolution of a conflict of sentiments is not a merely logical process. It may be as well to add that this is as true in the field of science as elsewhere. We see this most clearly in the great controversies upon fundamental principles. A conflict between symbolists and intuitionists in mathematics, or between mechanists and vitalists in biology, is at bottom of the same sort as a conflict between romanticists and classicists in literary criticism. It is a *party strife*, and only the blinded partisan can suppose that either side is illumined by the "dry light" of reason alone.

In scientific work a general principle serves as a standard to which particular observations are expected to conform. Not that all do conform, or that we need be very deeply perplexed when they do not. Often enough, when our principles are contradicted, we simply deny the accuracy of the new observation or the veracity of the report. More often, perhaps, we ascribe the apparent contradiction to the operation of unknown disturbing causes. Nothing is more familiar to us than that a rule should have exceptions. The proverb even has it that "the exception proves the rule."

But if the exceptions become frequent, and especially if they begin to exhibit a certain regularity, the whole complexion of the matter changes, for the principle itself becomes charged with the fault. It may not be at once given

up—in fact, it is extremely unlikely that it should; for the extensive correlation of detail that it formerly accomplished, it still accomplishes, and there is nothing as yet to take its place. But a condition of instability is produced. Attempts are continually being made to correct the principle in question so as to accommodate the troublesome exceptions; but too often the new formulae fail to cover much that was satisfactorily accounted for by the old. A division between conservative and radical parties occurs, just as in the case of a moral or political issue. And, despite all differences of detail, the final settlement is reached in fundamentally the same fashion. Comparative shortcomings must be appreciated, not counted; and the importance ascribed to each is, in the last resort, determined by tastes and prejudices.

According to the classical theory of market values, these are determined by costs of production and distribution. This theory applied very satisfactorily to shoes and flour; and if the application to oil-paintings was not so clear, one was not disposed to be too exigent. For one successful work of art, there must be many failures; and perhaps the cost of the failures must in some way be counted as part of the cost of production of the masterpiece. Still that does not seem to explain why one painting should be worth ten dollars and another ten thousand dollars. As attention became fixed upon the growing power of monopolies, many other exceptions were found, of greater importance—from the economist's point of view—than oil-paintings. The consequence was a period of unrest. New theories arose, especially designed to accommodate the exceptions; and this they did very well. But they had not nearly the serviceability of the classical theory in their application to the common run of market conditions. These theories in one way or an-

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other identified economic value with utility; and the partisans of cost of production and the partisans of utility presented the typical spectacle of conservative-radical opposition. After many tentatives, a reconciliation of the opposed theories was found by means of the so-called *marginal method*, which did justice to the portion of truth contained in each; and this has now acquired the prestige of a new orthodoxy.

Not all social conflict issues in evolution; but it is probable that no social evolution takes place without conflict between conservative and radical tendencies.

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PART II
THE FACTORS

CHAPTER VI

THE GEOGRAPHICAL AND RACIAL FACTORS

THE factors which have been suggested by different theorists as operative in social evolution fall into two broad classes: first, factors that are not in themselves social in character—climate, for example; and, secondly, the social factors, *i. e.*, the changes in one phase of social life, considered as the source or condition of changes in its other phases.

The non-social factors themselves fall into two main divisions, the *geographical* and the *racial*. Under the former head stands the many-sided influence of climate, especially of temperature and rainfall, and along with this the character of the soil and the supply of inorganic raw materials of various kinds. Here too stands the influence of the prevailing flora and fauna, including the disease-producing protozoa and bacteria and the insects and rodents which carry them. And, finally, here stands the topography in its relation to possible travel: on the one hand the facilities afforded by plains and valleys and natural waterways, and on the other hand the isolation produced by mountain and ocean barriers. The racial factors include the inherited (and inheritable) characteristics of the human stock, which organic evolution has produced and which serve as a basis for social evolution.

From the time of the Greek political theorists, the importance of both the geographical and the racial factors has

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been clearly recognized. The question is whether it has not been exaggerated. These factors are, indeed, essential. Society must have a suitable geographical environment, and there must be a human stock to be socially organized. But it is not merely the broad fact of social evolution that is to be accounted for. It is evolution accelerated here, retarded there, brought to a full stop or even reversed in another quarter; and for our theories the importance of a factor means the extent to which we can correlate its variations with concomitant variations in the evolutionary process.

THE GEOGRAPHICAL FACTORS

Civilization has its temperature limits, though man is so hardy that he has established himself almost everywhere over the land surface of the earth where any vertebrate life can persist. But the extreme north permits little advancement. The Eskimo lives today such a life as was lived thirty thousand years ago by the later paleolithic hunters and fishers; and it is hard to see how in his situation he could do better. All the energies of his nature are directed toward securing the prime necessities of life. It is a wonder that he succeeds as well as he does. It would be a miracle if he did much more.

But when the attempt is made to go beyond the bare statement of this limitation, it is difficult to find any sufficient support in the facts. That temperate climes are the most favorable to civilization is an ancient and well-worn remark. But what is temperate? Aristotle compared the situation of highly cultured Greece with that of the countries to the north and south, and found it to be a happy medium between opposite inclemencies. But the superiority of Greek culture was a very few centuries old in his time.

It had previously been far inferior to that of Crete and Egypt. In fixing upon the existing phase as if it were a permanent condition, Aristotle committed an imprudence. How great that imprudence was we realize when we reflect that today in Stockholm and in Montreal—that is to say, far north of regions where, according to him the rigor of the climate would account for the barbarity of the inhabitants—centers of an advanced culture are found. Moreover, the Eskimo, who lives under the hardest of hard conditions, is by no means the lowest of mankind. In the technique of his various arts there is a good deal that is surprising. It may be objected that his arts are necessary for survival in that environment—that he needs a knowledge and skill such as the Andaman Islander can well dispense with. But then the argument is reversed and, pulling both ways, leads nowhere. The fact is that men of nearly every level of culture are found at nearly all habitable latitudes. Where conditions are favorable they profit by them, and where conditions are unfavorable they triumph over them.

But what of the tropics? Are they not incompatible with a high degree of civilization? Is not the excessive warmth directly enervating, and the ease with which life under such conditions is supported more enervating still? These reasons are appeals to prejudice. The half-educated Englishman says as much of Italy. As a matter of fact the tropics contain societies of every degree of advancement from the lowest to all but the highest; and there is no reason to suppose that the very highest is impossible. Since the middle of the fifteenth century the people of Europe have made extraordinary, and in many ways unexampled, progress; and as one result of this they have spread themselves over immense areas of the two temperate zones

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to which they were constitutionally adapted. Furthermore, the Japanese, also a people of the temperate zone, have rapidly taken over European science and technology, and have even begun to make contributions in those lines. These facts give to the world of today an appearance, as if temperate climes were alone fit for the highest civilization; but there is no basis for a sound induction to that effect.

Much the same is to be said of the rainfall. There are conditions under which agriculture on any extensive scale is impossible, but where the raising of flocks and herds on the grass of the plains is eminently practicable. There we find a society which at some time has made an immense progress beyond primitive savagery, but which in its present status has found a stable equilibrium that has endured for thousands of years and bids fair to endure for other thousands: the nomadic patriarchate. On the other hand, in valleys where the rainfall is generous, or where a natural irrigation or facilities for artificial irrigation are found, agriculture springs up and flourishes; and in the denser, richer society new arts, new ideals, new institutions develop.

Such things happen; but they do not always happen. Water is needed for agriculture; but an abundant rainfall, together with all other geographical conditions of successful agriculture, may through millennium after millennium be wasted upon the primitive wilds, as in the most fertile portions of the North American continent. The semi-arid plains seem destined for the pastoral nomad—it is the most plausible instance of geographical determinism that can be cited. But, again, the semi-arid plains of our great West have never been inhabited by clans of pastoral nomads, and there is no probability that they ever will be. Lack of suitable animals for domestication may be somewhat doubtfully

urged for the period before the coming of the white man. But all that is lacking now is the nomad himself.

This is not to argue that temperature and rainfall are not factors of social evolution. It is clearly apparent that they are. But they have no uniform mode of affecting societies; and the attempt to reduce the evolutionary agencies to such terms as this leads inevitably to disappointment.

Consider a culture map of the New World in 1492. It had been free for ages from external interference; and though in so vast an area migrations of greater or less moment are always in progress, the conditions may be regarded as reasonably stable and as a fair representation of what the different sections favored in the way of degrees of civilization—if it be true that they definitely favored anything. Comparing this map with a culture map of the New World of today, we find relatively few points of resemblance. Mexico and Peru no longer represent the forefront of civilization; while New York and San Francisco, Buenos Ayres and Rio de Janeiro stand amid the abodes of former savagery. And there is no reason whatsoever to suppose that in the course of ages to come the pre-Columbian distribution will ever again be approached.

The simple truth is that the effect of geographical influences varies enormously with the degree of culture already attained by the given society. The forest, which to the savage is as immovable as the hills—except, indeed, as it may be blasted by fire—melts away at the approach of the settler's ax. To the savage it is preëminently a covert for game. To his white successor it is on the one hand a nuisance to be abolished, and on the other hand—increasingly, as the years go by—a source of structural material to be laboriously maintained or reëstablished. To the savage,

again, the metals and the fuel stored away in the earth are as if they were not. To the civilized man they are a principal condition of his wealth and power, and of a host of multifarious activities. It is true enough that without these supplies his society could not have become what it now is. But they lay undisturbed and unheeded for tens of thousands of years, while the naked hunters passed over them in the chase. And this is a constantly recurring phenomenon. As clay had no importance for the men of Cro-Magnon, so, it may well be, the flint-supply had no importance for their ancestors of the Pliocene.

This is manifestly true also of the influence of natural barriers and highways. The mountains are crossed by trails and roads and even pierced by tunnels, so that though they cannot be removed their separative power is progressively diminished. But the water-barriers suffer a greater change than this. They are transformed into self-maintained highways. It has become a trite political saying, that the Atlantic Ocean no longer divides Europe from America, but unites them; and the saying is at least half-true.

For this general reason it must remain generally impossible to account for social evolution in terms of geographical influences. These influences are real and potent, but, as we have said, they set in motion no uniform tendencies. Societies are affected by identical external conditions in the most widely different ways, according to their different characters and especially according to the different degrees of development that they have already attained.

There is this also to be considered. More and more, as civilization has progressed, the natural environment of society has receded, while all manner of socially constructed products intervene. The larger features of the landscape

and the succession of the seasons remain unaffected by man's labors; but everything else that is about him bears the marks of his shaping hand and will. The fertile fields are reduced to cultivation, and produce in solid masses enormous quantities of a few fruits and cereals. The pastures are occupied by flocks and herds of the half-dozen species which he has selected. Roads, bridges, and canals, and above all the huge agglomerations which are cities—these constitute a socially determined modification of the natural environment, so extensive and so radical that it amounts almost to a new environment. Society has itself produced the shell in which it lives. It would be an exaggeration, but such an exaggeration as may be pardonable if it gives force to the expression of a truth, to say that society is its own environment. Certainly the biological conception of adaptation to environment is totally inadequate as applied to the phenomena of social evolution.

It remains true that social evolution has its geographical conditions. There are, if not determining conditions, at least conditions *sine qua non*. Coal deposits may be useless to the savage; but coal was necessary to the last century and a half of European progress. And, in the last resort, the conditions of vigorous health are bound to be requisite for progress; and though these are now in the main social they can never be entirely so.

The malaria theory of the decline of Greek civilization may serve to illustrate this last remark. That the introduction of this disease into Greece had lamentable consequences is beyond question. The aspect of malaria-infected communities is too familiar to us to leave serious doubt of this. The only doubt is the quantitative one: how this factor compared in importance with others, such as a long period of wasteful war; and it may be that the introduction

of the disease itself was a secondary effect of war. However that may be, the disease was an oppressive load for civilization to bear. Its persistent attacks, which, without immediately killing, sap the vitality of a people, taking the keen edge off of all their efforts, can certainly account for much. No sudden collapse was threatened. There was merely a steady and prolonged drag upon the wheels of progress, which may well have been sufficient to bring them to a stop.

Analogous remarks apply to the food-supply which a given region affords, though here again there is seldom a simple and direct dependence, social factors intervening. If not the actual production of the food-supply by means of agriculture or stock-breeding, then its availability is socially determined. The taking of fish must wait upon the invention of spears and hooks and nets; the killing of many forms of game must wait upon the invention of the feather-tipped arrow; and the exchange of food-commodities must, like other exchange, wait upon the development of the means of transportation. Yet the influence of the natural environment underlies all else.

In a broad way it may be said that the farther civilization advances the greater its degree of independence of given geographical conditions. The range of substitutes and remedies increases, until a direct and unequivocal necessity is seldom felt. The very extent of civilized society has become so great that only a world-wide need could fatally embarrass it. Our recent industrial and commercial progress is based upon coal. In a few centuries the available coal-supply will be so far diminished that the price of coal will become prohibitory for many of its present uses. Eventually a vast shifting of population may be produced—a convergence of population upon the seats of

water-power. England may become once more an agricultural country, while British Columbia supports a teeming industrial population. Even so, civilization might not be adversely affected. But the prospect is by no means inevitable. Already men of science are speculating upon the possibility of artificially reducing the heavier elements such as lead or gold—the cost of the material would scarcely matter—a process which in the case of radium is taking place naturally. Immense stores of energy would in this way be liberated; and the gradual exhaustion of the coal-supply would be viewed with equanimity—even if it remained worth while to continue to dig coal from the earth. As yet not the least suggestion of a method is forthcoming. Even the actual disintegration of radium cannot be expedited or delayed by any known agency. It may be that no solution of the problem will be found. But the conquests of science have been so great in the past, and its advance remains so constant and so rapid, that a somewhat indefinite but highly comforting optimism seems justified.

THE RACIAL FACTORS

SOCIAL EVOLUTION AS A PHASE OF ORGANIC EVOLUTION

Let us pass now to the consideration of the racial factors: the part that difference of heredity plays in determining difference of culture level. Here the question of overshadowing importance is that of the relation between social and organic evolution. The last half-century has been familiar with three different views of this relation. According to the first—first in time, under the immediate influence of a half-understood Darwinism—social evolution is merely a particular phase of organic evolution, the recent development of man. The doctrinaire individualism which was

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then dominant in English thought favored this interpretation. Society, as everyone believed, is a sum of individuals; and, indeed, if the individuals are subtracted it is certain that no society remains. Society, then, being such a sum and in no sense a real and distinctive unity, whatever characteristics it possesses must be the direct consequence of the characteristics of its distinctive units; and since these units are animal organisms of a certain species, the origin and development of these characteristics is simply the evolution of the species in question. Language, art, morality, government, and religion, like the enlarged big toe and the hairless skin, are in varying degrees distinctive of humanity, and differences in these traits serve to mark off from one another different varieties of men. The same scientific principles must operate in the explanation of human traits as in the explanation of any other specific characters. Above all, natural selection and the struggle for existence must be appealed to. Civilization has proceeded, and doubtless will continue to proceed, because in the struggle the higher civilization has, generally speaking, a decisive survival value. Superior strategy, organization, and equipment almost always win the day, and the favored possessors of these things increase and multiply and replenish the earth.

This theory, which might be called "social Darwinism"—though the term is now current in a somewhat narrower significance, according to which the struggle for existence between men is identified with *war*—was strengthened at points where it was most obviously weak by the introduction of the conception of *group-selection*. It was pointed out that where animals live in social groups traits that are not directly advantageous to the given individual or are even distinctly dangerous to him may nevertheless be fav-

ored by natural selection because of their value to the group of which the individual is a member and upon which his safety and prosperity depend. It was in this light that morality came to be regarded, especially in its more heroic and self-sacrificing forms. Honesty is not always the best policy for the individual. It may impoverish him and prevent his marriage, or it may interfere with the proper nourishment and education of his children. But habitual honesty is an excellent thing for society, that is to say, for men in general who are affected. It greatly facilitates exchange and, indirectly, productive enterprise of every sort; so that in the economic struggle between societies it may be of decisive moment. The like is remarked of heroic courage, which, indeed, exposes the individual to dangers from which the common run of men are free, but which strengthens his tribe for the day of battle.

A curious feature of this theory is its application to the so-called law of *recapitulation*: the fact that the development of an individual organism roughly repeats, though with many shifts and abbreviations, the evolutionary history of the species to which it belongs. The metamorphoses of the frogs and butterflies afford the most vivid and familiar illustrations of the law; but the development of the chick in the shell and of the child in the womb illustrate it equally well to the trained eye of the morphologist. No reasonable or even plausible explanation of the law itself has been discovered; but the departures from it can in a general way be attributed to the influence of natural selection. As a matter of fact, in recent years investigators have been much more impressed by the departures from the law than by the extent of the conformity to it, though far-reaching speculations continue to be based upon it.

Now the resemblance between the child and the savage is

an ancient observation, well known to us all and especially to those of us who are not too well acquainted with savages; and in the earlier decades of the nineteenth century it played an important part in social and educational theory. In the romantic essays in the history of civilization which were popular at that period, and out of which the science of sociology has grown, Homeric Greece stands for the boyhood of the world, or Greece and Rome taken together are regarded as related to modern Europe as youth to manhood; and in a broad way the progress of mankind is looked upon as analogous to the growth of an animal organism from birth to maturity. Accordingly, when Darwinism burst upon the world, and the conception of man as a product of natural selection was established, this further interpretation was inevitable: the rise of man from the condition of the ape to modern civilization is a process of organic evolution paralleled by the natural development of the child from infancy to manhood.

According to this way of thinking, the imbecile, who by reason of some congenital defect is incapable of entering fully into the social life about him, is a savage born out of time. The habitual criminal might be a useful and even distinguished member of a more primitive society, for crime is a phenomenon of atavism. The prostitute has a new claim upon romantic pity: if she had only been born a Polynesian she might not be the outcast or the scourge of humanity which she is, but a woman like any other. In the same way, the phenomena of mental disease, those of aphasia in its various degrees for example, are compared with the behavior of the normal savage.

How much in the way of valid observation can be culled from this mass, it would be difficult to say; but as it stands it is well-nigh worthless. The whole theory is vitiated by

its neglect of one essential circumstance: the difference in the mode of transmission of organic and social traits. Organic traits are passed on by heredity. Hence the decisive importance of their survival-value. Social traits are passed on by suggestion and imitation. A new social phenomenon can sweep over a whole people in the course of a few generations, in the meanwhile passing through an extensive further development; while a new organic variation would under the most favorable circumstances be still a rarity. It would seem as if the temporal factor alone would have been sufficient to mark the distinction. Organic evolution is a fearfully slow process. Its course is measured in ages and epochs. Social evolution is, by comparison, a rapid process, even in its beginnings; and it is an increasingly rapid process. Modern history is the affair of a scant five hundred years.

When with open eyes we look upon the details of the theory, it becomes difficult to realize that it should ever have been taken seriously. Selection between human groups is, indeed, an important phenomenon. We have already had occasion to allude to a most striking example: the occupation of a great part of the earth's surface by the people of Europe. But such selection will certainly not suffice to account for the development of traits within the group. Here again the time-factor is significant. During the vast periods of time that are concerned in the evolution of species, numberless variations in all manner of directions may be conceived to have been initiated. Hence a selective agency operating by generations may suffice; and either an individual or a group selection may be credited with an almost unlimited effectiveness. But for social evolution the time is too short. An incessant *psychological selection* is required: the struggle between suggestions and impulses,

in which success is determined not by the life or death of men but by the pleasantness or unpleasantness of experiences.

Savages are far from being a race of children. They resemble children in certain striking ways, mostly traceable to the fact that they live free from certain forms of restraint and discipline which leave a deep impress upon the civilized adult. The savage has the bright eye, the expressive mouth, the eager gestures of the child; and he does not know the multiplication table. But in every physiological respect—and that includes the development of all the congenital powers of mind as well as body—the comparison between them is ridiculous. Nor is the savage an imbecile. And while the criminal and the prostitute are often noticeably imbecile, they are not savages, but distinctive by-products of culture. The atavism that one finds exemplified in them is an atavism in comparison with the normal savage as well as with the normal civilized man.

THEORY OF DIRECT DEPENDENCE

The second theory which we have to consider differs from the first in that it recognizes the distinctive character of social evolution; but it maintains that social evolution is conditioned by a more or less concurrent organic evolution. Furthermore, it holds that the very different grades of culture of the different peoples of the earth can only be accounted for by differences in their hereditary endowment. You cannot civilize the Bushman; and the reason is fundamentally the same as that which prevents you from making a silk purse out of a sow's ear: the raw material is not fit. The lower races are lower because they are poorer stock. They have failed to acquire the essential organic improve-

ments that make the higher races capable of continued progress.

The most important feature of the racial improvement is generally regarded as a strengthening of *intelligence*, and in the following pages this conception of the matter will alone be explicitly discussed. The same arguments, however, that are used with reference to intelligence may be applied with little or no change to other traits. Other traits may, indeed, be equally conceived as affecting the civilizability of a people: perseverance, industry, combativeness, mutual sympathy. The heart is not less important than the head; and if there be racial differences in capacity for culture they may as well lie in emotional tendencies as in the powers of comparison and analysis. Even in definitely intellectual accomplishments the temperamental factor is of considerable moment. Laziness and inconstancy may be as fatal as mere stupidity.

That the higher races are more intelligent than the lower is superficially obvious. It is an almost universal conviction, and it yields with difficulty to opposed considerations. The very fact of the difference in acquired knowledge and power seems sufficient to prove a corresponding difference in original endowment. Really it proves nothing of the sort. Such a difference in endowment remains simply one cause out of many which may be conjecturally imagined to account for the observed phenomena.

Sheer ignorance and prejudice play a great part in the forming of men's judgments upon men of other races and traditions. How can a man whose skin is black, whose nose is broad, and whose heels stick out absurdly, be the equal of a white man? How can a man who is personally dirty, who lives in a hovel with his cow and his pigs be the equal of one who bathes frequently and abhors vermin? How

can a man who worships before a hideous stone idol be the equal of one who worships the unseen Creator of the universe? It is so easy to be blinded by superficial appearances. It is so easy to forget that personal cleanliness is a recent innovation, by which even the foremost nations are very unequally distinguished. It is easy, too, to ignore the fact that for most of us monotheism is by no means an independent acquirement of our ancestors, but an importation from the Orient, and that in the very midst of the Christian church revivals of idolatry and fetishism have not been rare. Just such judgments as the white man in America passes upon the Negro, the Englishman passes upon the Irish peasantry. We look down upon the poor and the ignorant, and, incapable of comprehending social causes, we attribute poverty and ignorance to an inborn defect.

Prejudice of this sort has not been without its influence upon the sociological theories of even learned men. A whole pseudo-philosophy has grown out of it. In its most recent form the characteristic feature is the exaltation of the so-called Nordic race,—the tall, long-headed blonds, who occupy the Scandinavian peninsula, and who constitute an important element of the population of other northern European countries, as well as of their present or former colonies. It is pointed out that in historic and proto-historic times the various peoples of this race have made incursions into the south, establishing themselves as masters over the native populations, and that at the present time the aristocracy of Europe is largely composed of this stock. This was also notably the case with the ancient Greeks, where the bulk of the population, consisting of Mediterranean brunettes, was lorded over by a fairer aristocracy in which the Nordic element was probably always strong and in early

times predominated. As in this most notable case, important advances in civilization have sometimes been made by peoples thus constituted. There is always, naturally, a great deal of intermixture between the two races, the northern on account of its smaller numbers being the more visibly contaminated; and in the course of time—partly by reason of the sheer difference of numbers, partly too, perhaps, because the northerners are imperfectly adapted to the more intense light of the southern sun—the blond stock tends gradually to disappear. According to the theory, this is the “passing of the great race,” the extinction of the superior genius which has produced the modern world; and the lovers of humanity are called upon to discourage in every way the further mixture of the higher and the lower stock. The facts insisted upon are too capriciously chosen to have any great scientific value. But if they prove anything at all, it is that while the Nordic race in its purity has made very little contribution to civilization, the mixture of the two races is unusually productive of men of superior ability and has made very great contributions indeed. Why under these circumstances we should discourage such mixture is hardly clear. For the darker peoples of the south show comparatively little tendency to migrate to the north; so that there remains ever a reservoir of Nordic blood with which the Mediterranean blood can be profitably commingled. But, indeed, the whole subject is too confused to admit of a sober induction’s being drawn.

At the present time we are experiencing a strong reaction against the tendencies expressed in this wanton speculation. Most sociologists are now reluctant to assume any intellectual differences between the extant races of mankind, and some would go so far as to say that the most careful comparison fails to reveal any evidence of racial superiority.

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In native ability the Bushmen of South Africa and the aborigines of Australia are declared to show no substantial inferiority to European whites. It is pointed out that within the domain of their own traditional activities, savages sometimes exhibit an extraordinary craft and skill, and that the apparent superiority of the European is suddenly reversed when he is stripped of his artificial resources and left to shift for himself under primitive conditions.

The repeated experience of would-be philanthropists who have endeavored to give a European education to savage children, has been interpreted in two exactly opposite ways. The experience itself is simple enough. The young savage shows himself to be surprisingly gifted—perhaps because it is the bright child who catches the attention of the philanthropist. He does well in his studies and makes satisfactory progress—until the age of puberty. Then he loses interest; he becomes dull and slothful; and at the first opportunity he slips away from his civilized surroundings to return to the wild life of his own people. On the one hand this is interpreted as the arrested development of the member of an inferior race: while his white companions are still pressing onwards, he lags behind and soon comes to a final stop. On the other hand it is pointed out that social causes are in operation which may be entirely sufficient to produce the observed effect. The savage child in the civilized community finds himself, as he grows older, hopelessly isolated. He has no place in the world. There is no real friendship for him. Some may show him affection, but it is an affection never unmingled with contempt. No intimate companionship with members of the other sex is possible to him. If in his ignorance he makes approaches to a white girl, he is swiftly and cruelly brought to a realization of his essential loneliness. Given these conditions, ambition and

persistent effort are impossible. The social contacts that are the necessary stimulus of further intellectual development are wanting. There is no moral support. The return to the blanket is the only way out.

There is less evidence of intelligence in the savage's peculiar skill than he is sometimes given credit for. He shows a resourcefulness that to us is amazing; but it is in the application of a traditional knowledge and the practice of traditional arts. Evidence of anything like inventiveness is not so convincingly shown. It has been argued that the invention of certain weapons, such as the bow and arrow must have required a high degree of intelligence; but that will not hold. Scarcely anything above the level of the method of trial and error can be rightly inferred. If the bow and arrow were to be invented out of hand, a genius of the first order would be requisite. But it is altogether more probable that it came into being through a long series of almost insensible modifications. In its simplest form it may well have been a toy; and as a toy it may have persisted till successive improvements had made it effective as a weapon. Certainly no man with a primitive hunter's knowledge ever thought out the feathering of an arrow. The device must have been magical. Birds fly with their feathered wings; so, if we wish our arrows to fly well, we should equip them too with feathers. Given this conception, a thousand years of success and failure would be quite sufficient to teach men where and how the feathers must be attached in order to be really serviceable.

But the reverse argument is equally insecure. If we grant that the savage invents nothing, that proves little against the quality of his intellectual endowment. For the conditions of invention are mainly social, in part also geographical. Americans are notoriously inventive, and they

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are very proud of it. The United States patent office contains a wonderful record of ingenious achievement. But there is no reason to suppose that Americans are naturally gifted with an ingenuity and resourcefulness beyond their fathers and cousins in the Old World. The extraordinary conditions under which they were placed, with the problem before them of extending an already highly civilized life over a virgin continent of immense resources, gave scope to all the inventive genius that they possessed. Something analogous undoubtedly happens from time to time among the lower peoples and accounts in some measure for the progress that they have actually made. But, for the most part, the savage, like the peasant, has but to continue a mode of life for which the customs of his people from time immemorial have prepared him. He is intensely conservative, and, besides, his life is hedged about with innumerable taboos. He has no problem of existence. So long as he is suffered to live in the traditional fashion he is exceedingly contented. Again, little in the way of invention is wholly the work of any one people. In any considerable advancement of knowledge or skill there is generally an imported element—a significant suggestion from without. Now the peoples whom we regard as lowest in the scale of culture are, as a rule, relatively isolated. Frequently they have been driven by powerful enemies from their earlier, more desirable homes, to swamps and deserts and barren mountains, where it is not a life of new opportunities that is open to them, but a life in every way restricted. The adaptations that are called for are not the inventions that make for progress, but the petty makeshifts of an impoverished existence.

Such considerations lead to no clear conclusion; and it may be doubted whether any other mode of comparison

within our present reach would be more decisive. It is perhaps conceivable that some intelligence-tests might resolve the question; but it would be exceedingly difficult to devise the system. The comparison of native intelligence, as distinguished from the effects of the social environment, is at present practicable only where the social environment is substantially uniform and may therefore be eliminated as a factor from both sides of the inequality. The comparison where the social environment differs, and differs in the most radical way, is of another order of complexity altogether.

As matters stand, the only evidence of racial inequality that is of the least value is the long familiar anatomical evidence of the size and shape of the cerebral cavity. This evidence is only suggestive. How much weight to ascribe to it we do not know. In a comparison of individuals it is utterly untrustworthy. But a broad comparison of our nearer relatives among the mammals shows that the elevation of the brow—that is to say, the enlargement of the brainpan and of the brain itself—proceeds concomitantly with the development of intelligence. Does this relation hold as between the races of men? Where the differences are great, we may somewhat hesitatingly presume so, in the absence of distinct evidence to the contrary. When we see side by side representations of the skulls of the orang-outang, the Australian black, and the European, the suggestion is too strong to leave us wholly unaffected.

There is, however, a certain amount of indication that the lower races of today are *degenerate*—that such intellectual inferiority as we may ascribe to them is consequent to, rather than a cause of, their age-long social stagnation. A large skull-capacity was acquired by man in very early times. Neanderthal man and his later paleolithic suc-

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cessors had big brains, and the same may be somewhat doubtfully surmised to have been true also of their common ancestor. The primeval Piltown man seems to have had a very respectable brainpan. Furthermore, the higher and the lower races of today, whether determined by brain-capacity or culture-level, show little if anything in the way of definite relationships. The Australian black and the Englishman are probably more closely allied by blood than either is to the Chinese or the Japanese. Color, it is to be remarked, in man as in the organic world generally, is among the most superficial and variable of traits, and does not mask from the anthropologist the more significant likenesses and differences. Now it is, of course, open to conjecture that the higher intelligence of the European and the Chinese has been independently acquired, and that the lower intelligence of some other races is a survival of an earlier common condition. But independent and parallel acquisitions, though not rare, are less easy of acceptance than the coincidence of a parallel degeneracy. We recall that the more recently acquired traits of a species are the readiest to suffer from atavistic degeneration, and we need not hesitate to apply this principle to the higher human faculties. We recall also that the life of the savage offers little stimulus to inventiveness—that it is, as we have said, a condition of relative stagnation. Through tens of thousands of years custom and tradition have largely performed the work of intelligence. Under such circumstances, intelligence is the less favored by natural selection and the less protected from atavistic tendencies.

Thus it is by no means certain, even though wide differences in intellectual ability are admitted, that racial advances in intelligence have been among the conditions of so-

cial evolution. Even though certain races be now organically unfit for civilization, and others seriously restricted in their possibilities of improvement, it does not follow that the actual advances in civilization made by the more favored peoples were dependent upon successive improvements in their hereditary capacities.

THE INDEPENDENCE OF SOCIAL EVOLUTION

It is time for us to consider the third theory of the relation between the organic and the social evolution of man ; namely, that to all intents and purposes the former entirely precedes the latter. According to this view the "natural" man—that is to say, man as organic heredity makes him—is a fixed datum upon which varying social influences are brought to play, while the whole of human progress affects only the social product. Thus, to take the somewhat striking example of music, it is maintained that the sensitivity of the human ear to the various intervals, the sense of harmony and of tonality, the perception of rhythm, and the rudimentary memory for melodic successions are substantially unchanged throughout human history. These things vary greatly from individual to individual, and it is not impossible that they vary from race to race. But the evolution of music implies no improvement in the congenital endowment of the races in which that evolution has taken place.

How can this be possible? Because of the fragmentary nature of the organic inheritance. We do not inherit a single tune. We inherit only a sensitiveness to certain elementary combinations of sounds, out of which an infinity of tunes can spring. Nature makes us rich in possibilities, and all the richer because we are so poor in actualities.

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There is, indeed, a musical inheritance; but this is transmitted, not by organic heredity, but by *social heredity*, or tradition. Our major and minor scales, the forms of the song and the dance, as well as the higher forms of contrapuntal and symphonic music, belong to this inheritance, into which the young of each generation must be initiated, so that in their turn they may initiate those who follow them. It is in the content of the musical inheritance that the evolution takes place. It is registered, not in the structural elements of reproductive cells, but in musical literature and instruments and practice and standards of taste.

This is, as the reader will see, merely an aspect or an application of the *theory of infancy* which sprang up so unexpectedly as a supplement to Darwin's theory of evolution. As in music, so in other things, we are all born as babies. We are not furnished by nature with a system of complex instincts that would prepare us from the outset for all the emergencies of life. She has given us disconnected and ineffective impulses together with the capacity to learn. The caterpillar and the pollywog are not infants. The chick is not an infant. The kitten and the puppy are; and in their happy play they complete their preparation for adult life. But the baby is immeasurably more of an infant than the kitten or the puppy. Though he is not born with his eyes shut, his helplessness is far more radical and it lasts many times as long; and in his helplessness lies the secret of his potentialities.

Let us admit, then, as abstractly possible, that a considerable social evolution may take place without any organic modification. What is the evidence that this has indeed happened? The primary evidence is to be found in those temporal relations which we have already noticed in another connection. Consider the evolution of modern music. At

the beginning of the Renaissance it contains already many elements of beauty, but the sudden rise is none the less a stupendous thing. Between the beginning of the fifteenth century and the end of the nineteenth it was as if a whole new world of human experience had been created. Nothing that we know of organic evolution can approach this. If some slight structural modification had occurred, and if there had been time for its dissemination—for the movement is of European extent—we fail to see how it could account for the phenomenon.

This example is merely typical of the history of the last five centuries. The growth of modern music is more wonderful than the rise of the drama in England and France, only because the latter process was at times assisted by the use of Latin models, which, however, were eventually far surpassed. It is not at all more wonderful than the rise of modern painting. And when our thoughts turn to science, and we consider the prodigious development of modern mathematics, on the one hand—the creation of a conceptual world not less new than the world of musical sounds—and of experimental science, on the other; when we think of the changes that have come over industry and commerce and law and politics and every other department of human activity, we are forced to the conclusion, that no social change is too great to have taken place without the concurrence of any organic modification.

There remains, however, a certain reservation to be made. The earlier stages of social evolution, as the archeological record exhibits them, are characterized by a slowness that is more suggestive of the history of species than of that of modern society. The periods of time which may reasonably be supposed to be involved range from half a million to twenty thousand years, becoming steadily briefer as the

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paleolithic age advances. There is thus ample time for the appearance of racial modifications upon which the social changes might depend. Now it is noteworthy that the Neanderthal man—the oldest human type of which we have considerable skeletal remains—is far more different from any of the existing races of men than these are from one another. So emphatically is this the case, that in spite of the fact that he acquired considerable skill in the chipping-out of stone implements, and in spite of the fact that he was capable of burying his dead, many authorities have not hesitated to regard him as belonging to a distinct species of the genus *homo*. For one thing, he was not wholly erect; for another thing—and this is what may particularly interest us here—he seems to have been incapable of such varied and distinct articulation as ourselves. Now all human coöperation depends very intimately upon the use of speech; and even in the acts which are performed in isolation a previous coöperation is generally implied. One might be pardoned for thinking that the structural inferiority of the Neanderthal man is significant of a radical inferiority in mental capacity, and that for an advance beyond the stage of culture which he exemplifies an improved stock was necessary. Somewhere in the east the later paleolithic men arose; and when they appear upon the western scene they have already passed beyond his stage of culture, and in particular the new art of grinding bone implements has been definitely acquired.

But this is the only case within our knowledge in which we are tempted to correlate a definite advance in culture with an improvement in the race; and the evidence in this case would be more convincing if Neanderthal man were a direct ancestor, instead of being merely a sort of uncle, of modern man. At any rate, the fact that the later

paleolithic races never took the further step of grinding stone as well as the softer bone, cannot be connected with any organic defect in them. The Cro-Magnards, in particular, are a finely formed people, with certain negroid features in the proportions of their limbs, but with nothing about them that can be regarded as a stigma of mental inferiority. They perished from the earth before men who may well have been no more gifted than themselves, but who had, perhaps, superior weapons and a manner of life that enabled them to assemble in superior numbers. To say that because the Cro-Magnards never progressed beyond the hunting-stage, therefore they were constitutionally incapable of doing so, is wholly illegitimate.

If without dogmatism we endeavor to draw a general conclusion from the facts before us, it is this: that in its earliest stages social evolution may well have been dependent upon organic modifications; but that the farther social evolution advances the less need it has to wait upon changes in the organism. And, as a matter of method, if we consider the fairly continuous progress that has gone on during the last ten or twelve thousand years, it is folly to look to improvement in the race for the explanation of any part of this advance.

FURTHER QUESTIONS

There are several questions closely connected with that which we have been discussing, which, while they introduce considerations that lie beyond its limits, may conveniently be considered in this place.

While interracial differences remain problematical, there are differences within each particular race which are indubitable, and, indeed, in certain cases enormous. There

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is the whole range from genius to imbecility. Now individual genius is notoriously a sporadic phenomenon, due to incomprehensibly delicate combinations of factors. But what are loosely called "family" traits, the particular strains of hereditary tendency which in reproduction are so variously combined, are exceedingly persistent—scarcely, if at all, less persistent than the distinctive characters of the race. This is, indeed, one of the fundamental inductions of morphology, obtained first by Mendel from observations of certain flowering-plants, and since then verified in numberless studies extending over the whole organic world. One would not be so sure of the Mendelian law in relation to man—much of whose complex nature affords no basis for a decisive test, and whose slow reproduction makes observation the task of centuries rather than of years or decades—if it were not so amply confirmed by studies of the greatest variety of short-lived plants and animals, and if the little that has been definitely noted in man himself were not fully in accord. Many authorities would now say that the species or the race is merely a collective name for a larger or smaller group of intrinsically distinct "family" strains. The word "family" must be used with caution. In sexual reproduction the inheritance of the offspring from the two parents is equal, while the part that is inherited from the two parents of each parent may—apparently—be in any proportion whatsoever. It is, then, really the "unit-characters" that endure,—the elementary tendencies themselves, which from generation to generation are combined and recombined in endlessly shifting patterns, without suffering any appreciable modification in the process.

Now in the life of human society the poorest strains are a serious drag upon the rest. The more efficient members of society generally, in one way or another, prey upon the

less efficient; but the least efficient, by reason of their drifting into crime and prostitution, may prey upon all the rest. Furthermore, the least efficient members constitute a persistent source of adulteration, from which physical and mental weakness spreads gradually throughout the whole social mass. The question, therefore, presents itself, whether, apart from any evolutionary modification of the race as such, the elimination of the less desirable family strains has not been a primary condition of social evolution.

The question in this form is more easily asked than answered. That the elimination of a considerable portion of the relatively unfit would be a favorable condition for social evolution may be admitted. But whether, during historic or proto-historic times, such elimination has occurred upon a scale sufficient to improve the organic stock is not so clear. A certain amount of natural selection appears to be necessary to prevent racial deterioration. Whether there has been more than this amount we do not know.

Purposive measures of selection might conceivably accomplish a great deal. We can imagine human beings bred as blooded cattle are bred, all inferior specimens being put to an early death or at least permanently separated from the selected herd. Infanticide is, indeed, an exceedingly widespread practice, and eugenic motives frequently enter. But unfortunately infanticide, where it is practiced, lends itself all too easily to motives which are far from eugenic. The very lowest savages rarely practice it, and those who are more advanced are thoroughly capable of appreciating the advantages, in the way of increased ease and pleasure, of a limited family. Where definite social ranks exist, a eugenically indiscriminate infanticide—or, what for the present purpose amounts to the same thing, the general prevention of conception—is all too likely to occur in those

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ranks which are just below the highest, where ambition is keen and love of luxury is strong, but the means of satisfying them appear to be insufficient.

On the other hand, when a eugenic infanticide is practiced, there are often ulterior motives, which are themselves far from favorable to social progress. The case of Sparta is typical, and it is curiously analogous to what morphologists call "parasitic degeneration." The Spartans had fastened themselves upon a far more numerous population of men who were by no means inferior to them in general culture, and every social effort was concentrated upon the task of keeping their grip unshaken. As a consequence, Spartan society shrank to a military establishment. The killing of infants that were not visibly robust was incidental to this more general phenomenon, and thus did not contribute to any actual progress except within very narrow lines.

On the whole, we may regard it as probable that eugenic measures have never been contributing causes to any considerable social evolution. Whether they may not yet be profitably employed to that end is a further question, which need not concern us here.

A more plausible case may be made out for the theory that a relative weakening of the more desirable strains has at times been responsible for the arrest of social evolution. What has somewhat poetically been called "passing on the torch of civilization" is strongly suggestive of this. When one looks upon history in a long perspective, one has repeatedly the impression that a race or a people, after making a certain advance, is exhausted and has no more capacity for progress; while a people of lower culture, coming into contact with the first and rapidly assimilating its arts and institutions, proceeds to make further headway.

To what is the apparent exhaustion due? It may be to definitely social causes, such as a disorganization of industry and a consequent wide-spread poverty. It may be due to endemic disease. It may, again, be due to a transmitted physiological weakness—a weakness not precisely inherited, but caused by the poisoning of the reproductive cells or of the unborn child, from the body of the parent. Civilized life is very different from that to which man's organic evolution has primarily fitted him; and the consequent nervous strain may easily be conceived to have cumulative effects. But also the exhaustion may be due to the fact that the better stock is sacrificed in prolonged warfare, or, worse still, fails to perpetuate itself by reason of delayed marriage and the prevention of conception. In that case a renaissance coming after a period of barbaric incursions would be attributable partly to a change of manners which put an end to the differential race-suicide, partly to the new blood introduced, and perhaps especially to the fortunate combinations of hereditary tendencies which a mixture of races may bring about. But this is mere speculation, a contemplation of possibilities which we have no adequate means of measuring.

It remains for us to ask whether, not the elimination of the least fit strains, but the multiplication of the most fit has been an essential condition of social evolution. A preliminary question is here involved, that of the *importance of great men*. It is well known that upon this question the most widely divergent views are held. Some writers have regarded history as consisting of the deeds of its successive heroes, the great majority of men serving only as their instruments or as their means of support. Others have treated the great men as merely symptomatic of their generations. According to the latter class of thinkers, social

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movements are too vast and mighty to be appreciably affected by the efforts of a few individuals. Let us assume, for the sake of argument, that the first of these two extreme positions is correct, at least to this extent: that almost all initiative in the direction of progress comes from a relatively very few superiorly gifted men. It can then be shown that even on this supposition social evolution can not with any assurance be explained by referring it to biological factors, which at certain times and places have produced an unusual number of superior individuals.

If we consider more or less progressive periods of the same people we have no trustworthy means of comparing the relative abilities of the distinguished men. Even in the fields of art and letters and science, where the record of achievement is generally most adequate, the comparison of talents is exceedingly uncertain. There is both an advantage and a disadvantage in coming later. One benefits by coming into possession of an already developed technique; one suffers from the restraints of galling traditional limitations; and the balance of benefit or injury may incline in either direction. How shall we compare Thales—if we are so to call the discoverer of the law of the conservation of matter—with Chrysippus or Carneades, the subtle disputants of the Hellenistic schools? How shall we compare the awkward Giotto and the facile, graceful Raphael? Or the author of *An Old Wives' Tale* and the author of *The School for Scandal*? But it is only in a very limited field of endeavor that so much of a record remains to serve as a possible basis for comparison. Political activity, for example, seldom issues in the creation of masterpieces. It spends itself in struggles, which through long years may have no definite result, and which the imagination of the historian enables him only imperfectly to revive. Again,

a vast deal of superior ability may never be directed toward the acquiring of any special proficiency. It is not always true that the Jack of all trades is master of none; but a man may be a master of several trades without being a past-master of any. And the conditions of specialization are social as well as individual. Even that most extraordinary creature, the musical genius, is not predetermined in his career by his native endowment. For the musician, like any other artist, is more than an artist. He has other interests in life than the weaving together of melodies; and if those interests are passionately stirred, his career may be sacrificed. Milton gave up poetry for his country, and only the collapse of the revolutionary government restored him to his art; and we may be well assured that at any time within the last thirty years Paderewski would have been well content to do as much and more for Poland.

Accordingly, when we consider an age and nation in which an extraordinary number of great names appear—such as the century in England that embraces the work of Spenser and that of Milton—the phenomenon to be explained is perhaps not the multiplication of superior natural endowments, but the *concentration* of superior endowments upon the several occupations concerned. In the case just mentioned, the phenomenon is indeed a striking one. To speak first of literature, the century and a half before Spenser contains not a single name of the first rank. Chaucer had no worthy successor. And now in quick succession came the masters of dramatic poetry, Marlowe, Shakespeare, and Beaumont; and then, as if it were a happy afterthought, came Milton. England, since the time of William of Occam had been undistinguished in philosophy. Now she produced two thinkers of the first rank, Francis Bacon and Hobbes; and at the same time she produced two

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of the initiators of modern experimental science, Gilbert and Harvey; while the mathematician Wallis foreshadowed the coming of Newton. Meanwhile statesmen, men of law, and religious leaders were not wanting; and for bold, unscrupulous adventure Drake's fame is unsurpassed.

Which order of causes is responsible for this marvel—biological or social causes? Was there a multitude of prodigious births, or was there an exceptional combination of political, economic, æsthetic, and moral conditions? The latter alternative is not too easy to conceive, but the former can not be entertained for a moment. From all that we know with regard to the conditions of heredity, that first alternative amounts to conceiving the simultaneous coming of the great men as the sport of chance. There is no biological agency to which all of them, or any definite group of them, can be referred. But we can well conceive that if Shakespeare and Bacon had come to manhood a century earlier, the one might have lived and died a farmer, or might have written more *Canterbury Tales* for a public that was dead and in a style that betrayed the feeble inspiration that comes from the study of a master of old days; while the great chancellor might have been a man of affairs and nothing more, too profoundly wise to be ignored, too neglectful of the drudgery of his office to be more than temporarily successful. The social explanation is conceivable. The biological is no explanation at all.

Let, then, the geniuses be as important as you please. We have every reason to regard them as a part of the fixed organic datum upon which social evolution has to work. We need great men, but great men are always forthcoming as the opportunities for them arise. It is not in them that

the differentiation of periods of progress is to be found.

When we consider the general importance of the non-social factors of social evolution, we are impressed by the fact that severally and collectively they are far from constituting a satisfactory explanation of the phenomena. By "satisfactory" is not here meant sufficient for the purpose of prediction—that we hardly expect—but sufficient for the purpose of convenient classification. As we look abroad over the world, and consider the history of the various peoples and the various degrees of advancement which they have at different times reached, the geographical and organic factors afford no apparent basis for a separation of higher and lower.

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CHAPTER VII

ECONOMIC MATERIALISM AND SOCIAL DARWINISM

It is now in order for us to proceed to the examination of those factors of social evolution which are themselves social in character. The present chapter, however, is devoted to clearing the ground. In it we shall consider two doctrinaire theories which have had a wide influence not only in popular but in scientific circles.

ECONOMIC MATERIALISM

We can not well avoid giving some attention to the so-called "economic interpretation of history." This is the theory, generally credited to Karl Marx, according to which all social phenomena—political, ethical, religious, and even æsthetic—depend ultimately upon economic conditions; and that while reciprocal influences upon the economic life are not to be denied, these are to be regarded as strictly secondary. Political history, for example, or the history of religions is in itself merely an interesting chronicle. It is economic history that is scientific itself and makes all other history scientific.

On examination the theory shows itself to be so ambiguous and vacillating that no consistent presentation of it can be given. Sometimes it is a theory of human motives, and in this form we find it especially applied to the explanation of wars. This goes back, like so much else that is "materialis-

tic," to Plato. Socrates, in the *Phaedo*, is made to declare that all wars have as their object the pursuit of wealth, with a view to the satisfaction of the appetites arising from the body; and a similar statement occurs in the *Republic*.¹ We have lately been made familiar with the application of this mode of explanation to the Crusades, to the religious wars of the sixteenth and seventeenth centuries, and to our own Revolutionary War and Spanish War. Other sentiments, we are told, religious, patriotic, or philanthropic, are superficial and negligible. The true governing forces are less beautiful. War is only an extreme form of economic competition.

Explanations of this general type are often highly ingenious, and it is seldom possible to give any definite refutation of them. But they have very little scientific value. In every war economic interests are, as a matter of course, affected. A few men are clearly benefited, while many more hope to be so; so that by ignoring other circumstances one can always make out a plausible case for the proposition, that greed was at the bottom of it all. Such theories are popular with moral teachers and reformers generally. They serve to edify and to impart a sense of illumination. But the dispassionate historian has very little use for them. He knows that equally ingenious and plausible theories can be manufactured *ad libitum*. Nothing is easier, or less subject to rational checks, than the wholesale ascription of motives.

Sometimes the theory has to do, not so much with conscious motives, as with the play of objective forces. Thus it has been argued that the various forms of the family found among men show a close correlation with the modes of gaining a livelihood—not that anyone, perceiving the

¹ *Phaedo*, p. 66 C; *Republic*, p. 373 D.

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advantages of a certain form of family under given circumstances, deliberately advocated its introduction, but that the actual superiority of such a family caused every more or less accidental variation in its direction to be preserved. The patriarchal family, for example, is a direct outgrowth of the pastoral existence. It arose and persists, because under such conditions it pays.

This sort of hypothesis is on an altogether higher level than the other; and in many cases it is capable of being established by a wide induction with a considerable degree of probability. But the establishment of a great number of such hypotheses falls far short of demonstrating a general sociological theory. As a matter of fact, no such unified theory exists—only a mass of speculation of all degrees of probability and plausibility, held together by vague analogies.

Undoubtedly what gives satisfaction to the majority of those concerned tends to persist; and what gives widespread dissatisfaction is in a condition of unstable equilibrium in which some novelty may at any time topple it over. Undoubtedly, also, the fact that a given social arrangement pays is an important element in securing its continued popularity or at least tolerance. Furthermore, so far as economic competition exists, to be at a distinct disadvantage means that, unless some improvement can be effected, at least a relative decline must ensue. It can also be very easily shown that moral standards do not vary far from what is customary—and hence from what is economically stable—and that the fine arts are closely limited in their growth by the possibilities of continued leisure and of luxury.

But when the attempt is made to put the whole array of facts together into a unitary theory, a certain vagueness

soon appears. In the first place, the conditions which are included under the term "economic" are of the most diverse character. They include factors which are simply geographical: accessibility, climate, soil, mineral resources, and so forth. They include matters of traditional knowledge and skill, such as the technique of the various industries. They include modes of social organization, and especially the legal relation between worker and exploiter, such as slavery. They include such matters as the accumulation of capital, the supply of the precious metals, the degree of agricultural productivity, the available means of transportation. Now it is very right and proper that all these things and many others should be included in a theory of social evolution. But to call them all indiscriminately "economic" is to leave the "economic theory" with very little peculiar significance. Again, among all peoples the greater part of the energies of the vast majority of men and women is devoted to the production, distribution, and maintenance of wealth. There are other important activities, of course, such as courtship, the care of little children, the performance of religious rites, and all manner of sports and recreations. But the economic activities bulk so large that it is a very trivial thing to say that the whole of social life is directly or indirectly affected by them.

In the second place, the economic theory lacks definiteness in that no uniform way is shown in which the alleged effects take place. This, indeed, follows directly from the multifarious character of the causes. The theory, therefore, when taken positively, amounts to very little more than an assertion of the principle of universal causal determination, together with a general invitation to the wildest and most unprincipled speculation—such as the explanation of the fall of Rome by a shortage of silver. Often, however, the

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real significance of the theory is negative: it is a denial of the essential significance of social factors, which, rightly or wrongly, are regarded as non-economic. Their existence is somewhat grudgingly admitted. With a show of broad-mindedness it is granted that reciprocal influences enter into the social movement: that religion and morality and—perhaps more powerfully—scientific investigation have their repercussions upon manufacture and commerce. But the economic agencies are still held to be the more fundamental. When one asks for evidence of this, only one response is made: that there is a continuity in economic development which is not to be found in any other field of social change. This, however, is far from being the truth. It seems true to those who assert it, simply because they are more familiar with economic history than they are with the history of religion, morality, and science. In fact, if in any field historical continuity is prominent, it is in the progress of science. There you have a story which advances with the logical consecutiveness of a Greek drama. It can even be argued with a good show of reason, that the only genuine human progress is the expansion and organization of knowledge—that other changes effect nothing that is secure, one age destroying what another has laboriously built up, while in this field the tradition has seldom suffered a severe loss, and over long periods of time has been steadily enriched.

The economic theory of history has, then, little to say for itself as a theory; but there is much to be said for it as a point of view, or, if you please, as a direction of research. In spite of the vagaries into which some of its advocates have been led, there can be little question of its great suggestiveness. Few historians would today be so bigoted in their "idealism" as willingly to ignore the economic factors in

human events. In this place, however, the subject need give us no further concern.

SOCIAL DARWINISM

We must pass on to consider the evolutionary importance of war. We have already touched upon this subject, first in connection with the racial factor, and just now in connection with the economic theory. War has, indeed, been viewed in two characteristically different lights—sometimes as a biological, sometimes as a specifically social phenomenon; and, viewed in either way, it has by many thinkers been regarded as a principal condition of social evolution.

(1) Let us turn back to the biological conception of the matter. Human progress, it will be remembered, is taken to be a recent phase of organic evolution, to be explained in essentially the same fashion as all the other phases. It is natural selection of fortunate variations that is the all-important factor in the historical process. In man, as in the whole organic world, the struggle for existence goes on unabated; and it is well that this is so, for with the cessation of the struggle dissolution would set in. What is characteristic of man, highly social animal that he is, is the organized nature of the struggle. It is a conflict not between individuals alone, or even between herds, but between smaller or larger communities. It is war. Thus war is simply the humanized form of natural selection.¹ It is terrible because man is terrible; and any sentimental interference with its horrors would, if such interference were not vain

¹ This is the theory to which the term "social Darwinism" most properly applies; but Novicow, who introduced the expression, employed it to denote any theory which makes of war an indispensable condition of social evolution.

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and ineffectual, work injury to the highest interests of humanity. The supreme law of nature is: *Be strong*; to which modern man may well add: *Be hard*. The strong may tolerate the weak when these are thoroughly submissive, and especially when they can be made serviceable. The strong should never allow the weak to stand in their way; and, what is more, they will not.

This theory has all the general defects of the biological conception of social evolution, together with others peculiar to itself. Despite its protests against sentimental weakness, it is, as a matter of fact, sentimentalism gone mad. Its defects, even from the biological standpoint, are so gross that on a cool inspection they can not easily remain hidden.

In the first place, it is an error to suppose that the Darwinian "struggle for existence" is necessarily a literal struggle between the organisms among which natural selection operates. The "struggle" is a name for the fact that in every species, even the most slowly reproducing, many more individuals come into existence than can possibly live to maturity and leave offspring behind them. The world is too small, and geometrical progression, even with a small ratio of increase, is too rapid. Actual conflicts between members of the same species are, of course, exceedingly common; and if other agencies of diminution are not sufficient such conflicts must inevitably occur. But the individual has hosts of enemies, from the bacteria up, against which he must maintain the integrity of his existence. He has a great variety of needs which he must supply from the environment, organic and inorganic, in which his life is passed. The success or failure of his neighbors of his own kind has no necessary relation to his own failure or success.

In the second place, when the struggle for existence between human societies takes the form of a direct conflict,

war is only a part of it; and, as civilization advances and the interconnections between societies increase and ramify, war becomes a less and less essential part. Of course, if success in the social conflict is identified, by definition, with military success, the case is apparently altered. But if success means either survival of the stock or the survival of the characteristic institutions of the society, victory in war is far from ensuring it. A career of conquest may go along with the rapid diminution of a people. This occurs in various ways, of which the deaths in war itself are often the least important. In ancient Sparta the number of citizens shrank steadily, owing to the operation of the unfortunate land-laws and marriage-laws, until the state was merely the shell of its former self. In the case of Rome the causal connection between conquest and racial decay is direct and evident. The permanent standing army, which was found to be essential to military success, was the grave of the old Roman stock, not so much because of high mortality as because it unfitted the men economically and morally for the lives of husbands and fathers. At the same time the unsettling of the conditions of agriculture and industry generally by the coming in of huge quantities of tribute and by the importation of slave-labor—the spoils of war—was a further discouragement to marriage and parenthood. Conquest is so far from guaranteeing race-expansion that it may seriously contribute to the contrary result.

In some cases success in war has led to increase in population through the opening up of larger opportunities for commerce and the consequent enlargement of productive industries. The naval supremacy and the colonial empire which England gained during the latter half of the eighteenth century constitute the most notorious example.

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But the industrial revolution in England merely led the way to a similar revolution in all Western Europe; and the effects upon population were felt even in Denmark and Sweden, which can hardly be accused of successful militarism. The great increase in German population after 1871 was again attributable in some measure to the outcome of the Franco-Prussian war. But it was not the direct fruits of victory, but the formation of the united German Empire, with the wiping out of costly commercial barriers, that was the more immediate cause; and such union was probably bound to occur sooner or later in any case.

Defeat in war, or even conquest by a foreign invader, is, as is well known, quite compatible with the persistence and even increase of the native stock. Men of the Mediterranean race have lived in England for some twelve thousand years. During historic times they have been successively conquered and overwhelmed by Saxons, Danes, and Normans; and similar invasions had certainly taken place in earlier centuries. But there has been no extinction of the older stock nor even any great limitation of its habitat; and if it is no longer pure as in olden days, neither is the blood of the conquerors. Such examples can be multiplied *ad nauseam*.

In the second place, success in war does not guarantee the extension of social institutions. Political constitutions may, indeed, be imposed by force; but we know how shallow is the depth to which such legislation sinks in the actual life of the people. A religion cannot be imposed by force, nor can a morality—it is well-known how vainly the Roman emperors sought to suppress polygamy in their Asiatic possessions. Still less, if anything, can literature, music, and

scientific and historical culture be imposed; nor can a language.

It is true that in some instances conquest is followed by the implanting of the culture of the conquerors, especially when this is distinctly more advanced. The results to Gaul of the Roman conquest are a typical instance. The Spanish occupations of the Philippines is in some respects an even more remarkable instance; for the Filipinos, though an oriental people of Malay stock, took over the religion of the conquerors, and with it their music; and the richer minority, as well as the inhabitants of the principal city, took over the Spanish language, either as a secondary language of culture or as a means of intercourse between natives of provinces whose dialects were markedly different. But a moment's reflection shows that though conquest has been one of the causes of the change, it has been far from being a sufficient cause. How many peoples besides the Romans have extended their empire over barbarian peoples, and how few have civilized them? What other oriental people besides the Filipinos have taken over Christianity from their European masters? The influence of the Roman government—its jurisprudence, its military discipline, its establishment of communications—and of the devoted lives of the Spanish missionaries followed upon conquest. But to set these things down to the credit of war is mere confusion. The utmost that can fairly be said is that war may introduce conditions under which civilizing influences can proceed. It generally has no such after-effect.

Furthermore, when the extension of culture does follow from war, it is by no means always from conqueror to conquered that it passes—as the story of Greece and Rome may remind us. The assimilation of an invading people,

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when these are numerically inferior, is a phenomenon of frequent occurrence. Often the influences work both ways, as in the relations between Saxon England and the Normans. The modern English language, fundamentally Saxon, but at once softened and enriched by the influence of its Norman element, images the relationship very clearly.

Finally, it must not be forgotten that a great deal of war—especially, but by no means exclusively, civil war—is simply, or almost entirely, destructive. There is no question of the survival or extension of one culture at the expense of another. As a matter of fact the influence of such war on social evolution—the War of the Roses, for example—has sometimes been great, but not in the way which the biological theory which we are here considering calls for.

(2) Let us turn to the consideration of the sociological theory.

There are two chief ways in which war has been held to operate as a distinctively social factor in human progress: first, in bringing together into a closer unity the members of a warring group, or by uniting several groups which find themselves in a common danger; secondly, by stimulating to the utmost the inventiveness of a people, confronted by the most pressing of all necessities. In either or both ways war has been regarded as essential to all the higher interests of humanity. Without it men would fall apart into anarchic individualism; and at the same time they would remain stupidly fixed in their traditional ideas and ways.

That war does unite men in devotion to a common cause is evident. That it is the principal unifying influence in society is not so evident; still less that it is an indispensable agency of socialization. The sentimental militarist writes

as if in time of peace men relapsed into an utter selfishness; just as he also writes as if all the occupations of peace were enervating and only in war was hardship to be endured. This, of course, is nonsense. Men who have never looked upon war are not noticeably less self-sacrificing than the veterans of hard-fought campaigns. The great common passions of fear and hate and glory, as well as the common concern for the welfare or even the safety of the country, undoubtedly draw men together; but the waves of passion pass, and the ordinary relations between men are left what they were before.

There is one way in which, it must be confessed, war unites the people of a country as nothing else can do. Even today it is the one great national enterprise, in which all the citizens may take some part—actively, or at least symbolically—and in which all can take a passionate pride. In this respect it is like the intercollegiate athletic contests in which a great university takes part—a university consisting of many schools and departments, academic, technical, and professional, between which the connections are often indirect and tenuous; and with its host of alumni, who are now engaged in occupations still more scattered and diverse. It is beside the football field, in the presence of the traditional rival for the coveted honor, that the university feels itself most substantially and palpably one. If the actual struggle is limited to a few chosen heroes, the whole crowd can at least yell, and can thus inject some part of its own emotional energy into the contending champions. So it is in war. Prince and tradesman, scholar and peasant have here one common interest and one common passion. And long after the conflict is over, school-children, studying the history of their country, learn to envisage it and to take pride in it, first and foremost as a fighting country. By a

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half-conscious propagandism its defeats are suppressed or minimized, or are used to throw into brighter relief its glorious victories. The result may be a gross falsification, but it is almost useless to protest against it. The public demands such instruction for the children; the children delight in it themselves. It serves its purpose, and nothing else is allowed to count.

It is not to be doubted that the spirit of unanimity which war arouses has been an important influence in maintaining national unity, and has thus been, if not a direct factor in social evolution at least a factor of conservation. Against this merit must, of course, be counted the deep-seated sectional and partisan hatreds that long remain as a heritage from civil war. But sometimes a new foreign war helps to wipe these out; as was evident in the effect of the war with Spain on the old hostility between North and South. It is an old and familiar device of statesmen, when domestic dissensions have become uncomfortably fierce, to take on a foreign war—that was Mirabeau's advice to Louis XVI—and the usurper strengthens his hold upon power by giving his people an external enemy against which they can, under his leadership, unite their forces.

All peoples have had their foreign wars and have experienced the unifying influence which these exert. No great record of national achievement has been made without war—just as no great monuments of art have ever been created by a people which did not indulge in some form of alcoholism. What is universal is necessary; what is necessary is indispensable; what is indispensable is essential—how easy the argument is!

It should be noted, however, that the sort of emotional unity which the war-spirit fosters is far from corresponding to the real objective unity which belongs to even the simplest

civilized state. It is, again, just as in the case of "college-spirit." Such devotion to an institution, if it chances to be directed toward a worthy end, can accomplish a great deal of good; but it may also do untold harm. To conceive of a university as a glorified athletic club is to vulgarize it to the last degree. So in the case of patriotism that is associated with the war-spirit—it involves no insight into the vital needs of the nation or of its minor communities, except the one need of the common defense; and the passion of military glory, into which it is ever ready to pass, is essentially barbaric, and is debasing in the confusion of mind which it causes as to the higher values of life—worst of all when it develops into the greed for conquest and national aggrandizement.

The unity of civilized life depends upon many factors: a common language and literature, common religious ideals, a common morality, a common legal tradition, an infinitely complex network of economic interrelationships. The cult of the conquering hero does not strengthen these things, and some of them it may easily disturb. When it leads to huge annexations and the attempted absorption of foreign populations, it may impair even the deepest bases of national unity.

The simple type of patriotism which war inspires is best adapted to a low stage of political development, where the war-waging group still effectively delimits all the major interests of its members—where the life of the individual is most nearly absorbed in the life of the tribe, and the stranger is intrinsically an object of indifference, even if he be not held in grim suspicion. It is probable that in savage society war has been a unifying agency of great importance; but with the advance of civilization its usefulness in this respect has greatly declined.

In one especially important respect war has contributed to the unification of societies: in habituating men to relations of personal authority. Among savage peoples there is very little such authority. The ruler is custom; and councils and sachems declare, not what must or must not be done, but what always is done. In the local institutions of peoples of a considerable degree of culture a similar state of affairs is often found—as Maine pointed out in the case of the village communities of India. Personal authority has two principal loci of growth: the patriarchal family and the military organization. Leaving the former out of present account, we cannot fail to recognize the great contribution which the latter has made to civilization. We see this clearly when we consider the social activities of the great despotisms which military success has built up. They collect great revenues, they assemble great multitudes of slaves for the construction of public works, they establish markets, they suppress tendencies to quarrel among the various subject populations and thus promote general confidence and all manner of peaceful intercourse.

But civilized society depends upon the upbuilding of a very different kind of authority—the authority of law, which unites something of the universal character of custom with the intelligent flexibility provided by a legislative power. To this development militarism makes no important contribution. On the contrary, the whole development is in opposition to it. Here again we are led to conclude that though war has made a certain contribution to social evolution, its utility in this respect has long since ceased.

But war has not only been held to be necessary to the formation of coherent social groups. It has, perhaps, more often, been declared to be an essential condition of the progressive consolidation of the smaller groups into larger and

larger organizations. The rise of the great empires of Persia and Rome, and of the great nation-states such as France and Germany will sufficiently suggest the sort of evidence which has been looked to for the establishment of this theory.

War, although itself a form of disunion, is conceived to effect the union of peoples in two ways: first, directly through conquest; secondly, more indirectly through the fear which drives several weaker powers to join together their forces against a common menace.

Now both these things are of frequent occurrence, and it would be idle to pretend that they have not played a part in the building up of nations. What the militarist forgets, and what common sense should recall to our minds, is that in numberless cases conquest does not result in the formation of a united people; and that as soon as a great menace is passed allies are only too likely to resume their traditional aloofness and mutual suspicions or even enmity. Neither force nor the fear of force is sufficient to bring about a real consolidation. The most essential condition for the maintenance of a civil union is the existence of a certain sentimental community of interests, a mutual confidence and concern. This rests in turn upon many other factors, among which a joint inheritance of military glory may count as one. But the immediate effect of conquest is exactly the reverse. It creates a deep-seated bitterness, which may easily endure for centuries, and which all the efforts of statesmanship—such as that is in this much perplexed world—may be unable to pacify. The conquering people, on their side, long retain a species of contempt for their victims; and the effects of ill-government and oppression may be such as seemingly to justify the contempt. After centuries of the forced union, even when equal civil

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rights are finally granted, even when the memories of comradeship on a hundred fields of battle are most lively, even when the material prosperity of the conquered province is considerable, the disunion persists. There is no real mutual confidence, but, on the contrary, continued misappreciation and misunderstanding. There is no identification of interests. The condition is an unstable one; and a political separation, when it occurs, has something of the character of a natural cleavage.

Conquest produces unity, when the unity is ready to be produced—when the conditions, moral and economic, are such that the multiplicity of governments is an anachronism, to which nothing vital in the hearts of the people corresponds. The clearest examples are to be found in the union of district, but more or less closely related, barbaric tribes under a single ruler, as more civilized conditions come to be established. Such a consummation brings peace and stability where they are warmly welcome, and where no wide-spread mutual distrust and hatred forbid the recognition of a fundamental community of interest.

How loose are the ties which fear of a common enemy can bind, history has often shown—never more clearly than in the case of the alliance of the Athenians and the Spartans against Persia. The danger was critical. Defeat meant the loss of independence to both, and the extension over the Hellenic peninsula of the mighty power which already lorded over the Greeks of the Asiatic sea-coast. The allies won at Plataea a glorious and decisive victory, and drove the enemy's forces out of Europe. Nothing, so far as their permanent attitude toward each other was concerned, was altered by the experience. The invaders were hardly expelled before hostile plots sprang up between them; nay, even at the most critical juncture their mutual jealousy

made coöperation difficult. It was not long before they were open enemies.

An instance scarcely less striking in its way is to be found in the relations between France and England during and after the Great War. In this case no enmity flared up, and the alliance even persisted in being. But a great diminution of mutual sympathy and a great resurgence of jealousy and suspicion occurred; and if the statesmen of both countries had not shown an unusual degree of consideration and mutual forbearance, a more serious misunderstanding was not impossible.

We have yet to consider still another aspect of war's alleged contribution to civilization: the stimulus which it has given to invention. Here we have again to do with a certain amount of indubitable fact. The demand for weapons and other instruments of war has been a keen and persistent one. Each improvement in design and manufacture has had an easily appreciable importance. Nothing is more eagerly coveted than a fine arm. To the demands of war we probably owe steel; and that debt is an immense one. To war also we apparently owe the domestication of the horse. Many other inventions and discoveries, if not primarily due to war, have been much more rapidly developed and improved under the stress of military needs, and have afterwards been of the greatest importance to peaceful industry. The industrial possibilities of the submarine are only at the beginning of their exploitation. The soldier's gas-mask has become an invaluable adjunct to certain dangerous processes of manufacture. The design and the operation of the airplane advanced as much in four years of war as they would probably have done in fifteen years of peace; and if since the armistice progress has gone on at

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an undiminished rate this is partly due to the impetus already received, partly to the apprehension of future wars.

When the known and the probable facts of this kind are admitted, it remains preposterous to maintain that the part played by war in the promotion of invention is a predominant one, and that on this score war is to be regarded as one of the essential factors in social evolution. The needs of human life, the directions of human ambition, are too numerous and too diverse for that. It would, indeed, be strange if after thousands of years of warfare a good deal of man's technical knowledge had not been picked up in that connection; but to exaggerate the importance of military necessity above all other necessities, as the mother of invention, is to fly in the face of history and common sense. When one thinks, for example, of the great series of mechanical inventions of the last century and a half, from the steam-engine down, the principal motives that appear are all connected with peaceful industry and commerce and the enjoyment of life. They have been "labor-saving" inventions; they have made available new sources of energy or have economized its application; they have speeded up production; they have facilitated travel and transportation; they have made communication over great distances instantaneous; they have given comfort and luxury and have provided means of innocent recreation. The part played by war in the whole process is not negligible; but it would be silly to regard it as more than a minor factor in the result.

Meanwhile we have looked at only one side of the account: war's contribution. We have been willing to forget the other side, the cost of war. Let us now, without attempting to estimate the magnitude of this cost, consider briefly its general nature. There is, first, the cost in life: among men

at the height of their physical powers, who fall in battle or go to an early grave as a result of wounds and extreme hardships, or who are so far incapacitated for work that they cannot marry; among little children, who die of exposure and want; among all classes of the population, who are victims of the epidemics which break out after a period of protracted underfeeding. There is the cost in property, whether through the actual expenditure for the carrying on of war, through the ravages of war in invaded territory, or through the dislocation of industry, the harassing of commerce, and the disruption of the habitual lines of trade. There is the cost in the form of embittered relations. We have admitted a certain utility of war in promoting unity; but we cannot forget the hatreds and revenges which it inspires. At the present hour the facts of this nature are too vividly present to be overlooked. There is a further cost of war in the vitiation of public and private morals. Justice is sacrificed to expediency; the ideals of personal liberty are dimmed; intolerance becomes a virtue. The very horrors of war, and especially the barbarities committed upon prisoners and upon civil populations, are brutalizing to all concerned. And, when the conflict is over, the necessity of preparing for a future conflict has an ever-blighting influence upon internal and external political relations, and even upon the education of children.

The apology for war sometimes takes a form in which it is closely analogous to a familiar apology for evil as such. Without it, we are told, we should have lacked something to struggle against and our natures would not have developed. But if the defense of evil is paradoxical, the argument as applied to war is ridiculous. There are countless motives to united social endeavor besides the need of the

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common defense. There are countless challenges to human ingenuity besides the emergencies of armed conflict. Looking to the future, we need not hesitate to declare that the less war we have to endure the better, and that, so far as the future progress of mankind is concerned, we can safely dispense with it altogether.

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CHAPTER VIII

INTERTRIBAL CONTACT

THE more uniform a culture, the less chance of producing from within itself anything new. The narrower its extent, the less variety it is likely to contain. Isolation, especially of a small community, almost necessarily occasions an arrest of development. The importance of foreign contacts, especially of fresh contacts, through which novel suggestions may be received, is therefore very great; and they have received much attention both from anthropologists and from special students of the history of language, art, science, and religion. It is in the fields of language and literature that the subject has in detail been most successfully studied, for the material is particularly abundant and is in great part well preserved.

Migration and conquest have, of course, cultural effects of other kinds than those which we can classify as suggestions from without. The migrating people finds itself in a new environment, physical and social, in which it must maintain itself. At one point and another, old habits and methods fail to produce satisfactory results and thus invite amendment; while new possibilities of accomplishment awaken ambition and the spirit of enterprise. It is in this way that we are probably to interpret the formation of that notable political organization, the League of the Iroquois. The Iroquois were newcomers, exploiting the possibilities of

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a new home. There was great glory and sufficient profit to be won. Certain of their neighbors were to be exterminated, while the rest had to be driven back and kept at bay. The political genius of the people rose to the occasion.

The effect of foreign example, however, is more direct. It economizes experience for the community, much as educational agencies economize it for the individual. If white men had not found the Indians smoking tobacco, it is quite possible that they would never have hit upon the practice themselves. But with the red man as master the lesson was quickly learned, and smoking traveled about the earth like a contagious disease.

It has been the fashion from time to time to minimize or to exaggerate the influence of foreign contacts. Thus in the field of philology it used to be urged that two languages can not mix: that the borrowings of one language from another are always superficial, never affecting its structure or genius. Now there are leading authorities who point to borrowing as a chief cause of language changes. Students of the history of science were early impressed by the fact that Greek mathematics and astronomy had their rise in the Ionian colonies, and did not hesitate to attribute the former to Egyptian influence, the latter to Egyptian and Babylonian. Toward the end of the last century the conviction arose that this was a mistake: that in reality Greek science was a purely native growth, owing nothing of any consequence to foreign influences. Well-known passages in Greek writers, which bore witness to the Egyptian origin of geometry and to the learning of the Egyptian geometers, were set aside on what now seem trivial pretexts; for at present the current of opinion has set strongly in the other direction.

DIFFUSION VERSUS PARALLELISM

Among anthropologists there has been a prolonged dispute as to the relative part that diffusion and parallel invention have played in causing the similarity in elements of culture, which is often found to obtain between widely separated localities. Cereal-raising in the Old and New Worlds, totemism in Australia and North America, hieroglyphic writing in Egypt and Mexico—these are typical examples. Folk-tales, taboos, magical practices, implements and methods of every kind swell the list. When the distribution of a culture-trait is fairly continuous, no one doubts but that diffusion has been at work. But in other cases the distances involved are so great that one easily jumps to the conclusion that no historical connection is possible. However, neolithic culture has had some twelve or fifteen thousand years to travel about the earth, and in that length of time even a snail's pace will carry one far; while the paleolithic cultures are very much older. On the other hand, metal-using peoples often have improved means of transportation. As a general proposition it may be laid down that the possibility of a connection between primitive cultures is never to be excluded on *a priori* grounds alone. There is, for example, no reason in the mere conditions of time and place, why American and Australian totemism should not have had a common origin.

Science is always suspicious of coincidences; and it is therefore not surprising that, either as a dogma or as a working-hypothesis, the proposition that parallelism in independent inventions never occurs has come to be widely accepted. There is much that is attractive in this way of thinking. Certain it is, that the mere "naturalness" of an idea is not sufficient to account for it. What could be more

natural than the wheel or the proverb? Yet neither existed in aboriginal America. Similarly, in explaining the ubiquity of manhood initiations, it is not enough to say that they are natural; for they would be equally so where as a matter of fact they are unknown.

The controversy has, however, entered a new stage. It has become a discussion of special cases, with dogmatism set aside, and with methodological distinctions carefully drawn.

There are such things as mere coincidences, which may be striking, but which do not go very far or very deep. The mother-in-law taboo of certain Indian tribes cannot but remind us of a sentiment which is widely prevalent among ourselves and has given rise to a perennial joke. But the entire setting and significance of the two ways of thinking is different. The young American fears that his mother-in-law may set his wife against him. The Indian feels that any familiar intercourse with his mother-in-law would be immodest. Again, the Visayan *aco* is not unlike the Latin *ego*—far more like it than is the English *I*—and the Visayan *duha* is at least as much like *duo* as is our own *two*. But these resemblances between Latin and Visayan words are isolated facts, at which the philologist may smile, but to which he will not give a second thought. Of course, even an isolated resemblance *may* have an historic ground; as the Filipino town of Danahu is said to derive its name from good Irish *Donohue*. But in the absence of direct evidence such a connection is never to be assumed.

There are also more substantial resemblances—analogies, as they have been called—which, however, are bound up with fundamental differences such as exclude the possibility of a common origin. The wings of the swallow and the bat are for a like reason called analogous organs. There is a

resemblance in form and function and in the external conditions to which these are related. W. H. Hudson has called attention to the charming analogy exhibited by the insect-like habits of humming-birds. Now a similar relation obtains between agriculture in the Old World and the cultivation of maize in America. The resemblance is manifest, and yet it is almost certain that they are mutually independent in their origin. It is well known that when an agricultural people migrates, it carries with it its seed, which it is as careful to save as if it stayed at home. But none of the cereals cultivated in the Old World were known in America before the coming of the Spaniards. It is almost inconceivable that if wheat, for example, had once been brought in as the basis of a successful agricultural economy it could have been utterly lost.

Sometimes the parallelism is closer, and only historical evidence can determine whether there has been a real connection. Classical Latin lacked both a definite and an indefinite article. The Romance languages have supplied the lack, using a demonstrative adjective (*illum*) for the former and the number one (*unum*) for the latter. The Teutonic articles—for example, our own *the* and *an* (*a*)—are precisely analogous, *the* being only a variant of *that*, and *an* being a variant of *one*. Has there been any influence in either direction? That is hardly possible. The Romance forms are the older; and the Teutonic forms are first met with where they were far removed from any effective contact with Latin. For that matter, the Filipinos have a definite article (*ang*) which corresponds exactly to ours. The parallelism is no doubt to be explained in part by referring it to universal logical conditions of discourse, which favor, though they do not necessitate, the rise of certain forms of speech—much as the presence of the air has at different

times occasioned the appearance of wings. A much more difficult example is furnished by the exogamous social groups (*gentes* and *clans*) which are based upon a unilateral tracing of descent in the male or the female line. These have a world-wide distribution; and it is still an open question, how far there is a genetic connection between the different cases. Such groups are not found among those peoples who are probably to be regarded as representing the lowest extant grade of culture, such as the African pygmies and the Veddas of Ceylon; though they are prominent among the Australian tribes, whose material culture is scarcely, if at all, better. In America they are on the whole characteristic of more advanced rather than less advanced tribes. Among pastoral and agricultural peoples they are very common; but, as the example of ancient Greece and Rome indicates, the individualism fostered by legal institutions tends to their enfeeblement and ultimately to their dissolution. They are very generally connected with inheritance; that is to say, most property passes to persons of the same gens or clan as the deceased; so that under mother-right, for example, a man's children will not as a rule inherit from him. This has been held to point to their independent origin in various parts of the world, in connection with the rise of different forms of private property. Furthermore, the functions of these groups vary greatly. Frequently, but not always, they have definite religious functions; occasionally they are political units; very often they are concerned with blood-revenge; often, too, they are associated with some form of totemism. But there is almost nothing that can be said about them universally. It is not impossible that this institution is derived from a single source. Even within the limits of the United States, however, their functions differ from one area to another to such an extent, that it is

plausible to argue that there have been several distinct origins.

DIFFUSION A UNIVERSAL PHENOMENON

But such questions are less important for the theory of social evolution than they once seemed. The controversy has been instructive, but chiefly in this: that it has impressed upon our attention the fact, that even if diffusion be not the sole cause of parallelism it is at any rate a universal and never resting agency of social change. In any community, almost nothing of the culture that prevails is really indigenous; and the little that may be so designated is imposed upon, or inextricably mixed with, imported elements.

The phenomena of diffusion give rise to striking time and space patterns; and when these are of comparatively recent formation, so that they have not been distorted by migrations from other quarters or overlaid by more recent phenomena of the same kind, they are often very suggestive. Suppose one central locality has taken the lead in some new form of progress. It begins to serve as a model for imitation and emulation to the surrounding communities; and these in turn do the same for those beyond; and so on, through stage after stage, in an ever-widening circle. But the process takes time; and while those at a distance from the source of the influence have scarcely learned their first lesson, the originators—or others near them—have had time to add improvements. These are passed outward in a second wave parallel to the first; a third wave follows the second; and so on. The center of the diffusion-phenomena will in general move, but comparatively slowly. The culture-map of the region will, accordingly, show a center at which the farthest advance (in the given respect) has

been made, and, about this, roughly concentric zones showing less and less advancement. Migrations outward from the central district will generally harmonize with this result, and may produce no distinct effect that can now be attested.

On an immense scale this process has been discerned in the general history of civilization,¹ though in order to see the picture one must overlook independent culture growths of considerable magnitude in Africa, in Polynesia, and, above all, in America. The paleolithic and neolithic cultures, remains of which are found in Europe and in the near East, have presumably been brought there by successive waves which set out from some Asiatic center and which simultaneously were spreading in other directions throughout that vast continent and to other parts of the earth. In historic times the same process has continued, but without reaching so far, and the outlying regions have generally been unaffected. The principal center has shifted and at times divided, while the diffusion went on. Babylonia, Egypt, Greece, the Italy of the Renaissance are stages of its journey in our own direction. Complicated phenomena of interaction between the various culture-centers (in China and India, for example) have occurred. If the plausible theory, according to which the extraction and working of iron are of Negro origin, is to be accepted, there has been this one great impetus received from the outside. The peoples, however, who had profited by the most thorough education through the use of bronze, were able to make infinitely more of iron; and the iron culture starts from them as from a new center. In the latest period, the larger scale on which social intercourse now proceeds, and especially the rapidity of migration, have transformed the general ap-

¹ Cf. C. Wissler, *Man and Culture*, p. 38 f.

pearance of the phenomenon. The waves of culture proceed from many centers in various parts of the world. Yet still in some of the most important features of our civilization—literature, art, music, science, philosophy—the principal influences continue to radiate from northern and western Europe.

Diffusion has its limits. These are in part geographical. Where travel and communication are impossible, a barrier to diffusion is of course set. Climate, too, sets barriers. When a culture-complex is attached to a particular plant or animal—the vine or the sheep, for example—it can extend only where that plant or animal is found or can be successfully introduced. In our own civilization, the dependence upon iron and coal is analogous, and is only partly masked by our efficient means of transportation. But the most important obstacles to the diffusion of culture are themselves cultural.

In order to be able to take over an idea or a practice, a people must be prepared for it. In another connection we have noted some illustrations of this principle, and we shall have occasion to return to it shortly. Here we will only add that a people may become incapacitated for the reception of one trait, by the introduction of another. Thus Christianity and Mohammedanism have never made any appreciable number of converts from each other's folds. They have won territory from each other by force of arms, but that is practically all. When the Spaniards came to the Philippines, the southern islands had recently become Mohammedan; and such they have remained. But the rest of the archipelago, which quickly became Christianized, has opposed a solid resistance to any further advance of the religion of the prophet.

DIFFUSION AS A FACTOR OF SOCIAL EVOLUTION

How far does the diffusion of culture, incident upon intertribal contact, serve to explain social evolution?

In the first place, it does not explain it away. We must not conceive of diffusion as bringing about a mere combination of culture-traits that remain essentially unaffected in the process. Even if this were the case, the origin and growth of the particular elements of the combination would remain to be accounted for. But the fact is—as we have already seen—that almost no borrowing takes place without some modification, without some adaptation to the new social setting. Thus, to cite once more a familiar instance, the use of tobacco traveled swiftly about the world; but the modifications which the tobacco-complex has undergone are enormous. Think, for example, of the peace-pipe; and then recall almost at random the Japanese woman's "one-puff"; the taboo upon women's smoking from which we are now escaping; the exquisite snuff-box and the no less exquisite ceremonial of politeness connected therewith; the smoking-car. The borrowed element, if it is not to be quickly lost, must become assimilated to the life of the people. It must become *theirs*, and hence in some degree characteristic of them.

If we look, not at the modification of the imported trait or complex, but at the process of adopting and incorporating it, we can not fail to see that it is of an organic, rather than a merely mechanical, character, and the more so if the place of the new acquisition is to be permanently assured. This process is, or involves, a new development—though in trivial cases this too may be trivial. Just as the education of the individual is no less a development because it takes place under the influence of suggestions and pressures from

the social environment, so it is with the growth of a people's culture. Perhaps the general principle can best be appreciated when it is considered in relation to a type of case in which the requisite development is impossible and disaster consequently ensues. To a hunting-people efficient fire-arms usually—though not always—seem to be the most desirable of worldly goods. They really amount, however, to an unmitigated curse. While the hunter's power is greatly increased, he continues to kill with as little thought of conservation as though his utmost efforts were barely sufficient to supply his needs; and so in a short time the hunting-grounds become stripped of game and the very existence of the tribe is imperiled. To avoid this result, the hunters would have to learn a lesson of systematic forethought which is utterly beyond their actual capacities. Indeed some form of legislation would doubtless be necessary; and the very notion of legislation is centuries and millenniums removed from them.

In the second place, the ultimate effect of borrowing *may* comprise a development far beyond the stage represented by the source of the borrowed elements. If borrowed culture could be simply pocketed and carried off, this would not occur; but because the process requires an internal growth, there is the possibility that it may set in operation tendencies which far outrun the borrowings themselves. Needless to say, this does not always happen. As a rule the borrower remains at a level fixed by the lender, or at a lower level. Something more than the foreign contact is necessary to produce the occasional remarkable effect. This is the previous condition of the borrowing people. Not only does this determine the very possibility of any assimilation; it determines what is made of the assimilated material.

The genius is a focal point at which a multitude of ten-

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dencies are concentrated. He is not independent of his generation; he epitomizes it. Something of the sort may be true of a culture-center. When a people becomes great this is in no small part due to their receptivity to influences coming from all directions. But, as in the case of the individual, what takes place is not a passive acceptance and an external adding together of the foreign contributions. In the new social mind the borrowed elements gain a new fecundity. In some measure this applies also to less fortunate or less gifted peoples.

Accordingly, in the third place, there is much danger of superficiality when progress is explained in terms of foreign contacts. These are almost always necessary and always insufficient. Even to be a good imitator is a talent. That the Japanese have twice rapidly taken over a foreign learning and industrial technique speaks well for their ability, whether this is to be regarded as characteristic of the race or as due to peculiarly favorable social conditions. To ascribe the recent transformation of the country to European influence is correct—and trivial. It leaves untouched one whole side of the matter. Why are the Japanese, of all the peoples of the orient, alone in having been thus influenced? Why, when they appropriated so much, did they not become Christianized, and why have they not adopted alphabetic writing? Why does the Japanese gentleman who has learned to play golf and tennis care nothing about studying the piano or the violin?

The diffusion of culture is doubly selective. Not all who are exposed to its influence are affected; and even those affected take only part of what is offered. The historians of literature are well aware of this fact. English literature has at various times owed much to French, Italian, and Spanish influences, but never in such a fashion as to lose its own

integrity. It has taken what it wanted and refused the rest. The dramatists of the great age reached out eagerly for material, wherever it was to be found; but they used it with the utmost freedom. Cervantes became a favorite source. Thus Beaumont and Fletcher borrowed the idea of the *Knight of the Burning Pestle* from *Don Quixote*; but for the noble and profound idealism which Cervantes puts into the mouth of his unfortunate hero they had no use. So also Fletcher's *Love's Pilgrimage* is based on one of the *Exemplary Novels*; but the sentiment of honor, which in the Spanish original is treated with entire seriousness, is simply burlesqued. On the other hand, at a later period, when the English romantic comedy had almost run its course and was resorting for its effects to an artificial and exaggerated sentimentalism, the Spanish influence became much more marked. Adaptations of the fantastic love-and-honor plays of Calderon became popular; and Dryden's first dramatic success—the *Rival Ladies*—was in several respects clearly a deliberate imitation of Calderon. But it was decadence that looked to Spain for new inspiration, because it found there what was congenial—not Spain that was responsible for decadence.

A most remarkable illustration of the relation of diffusion to social progress is to be found in the influence of the recovery of the Greek and Latin classical literature on the revival of the arts and sciences in modern Europe. Here the remains of an ancient civilization played much the same part that a contemporary foreign culture has more frequently played. To speak only of philosophical thought, it is well known that the various stages by which the modern era was ushered in were marked by a larger and larger acquaintance with the Greek classics. Of Plato the earlier medieval thinkers knew only the *Timaeus*, the dialogue in

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which his semi-religious physical and physiological theories are set forth. Of Aristotle they knew only two of the least important logical treatises. In the succeeding period—in which scholasticism arose—the entire Aristotelian logic, and then the complete collection of Aristotle's works, became known; first through translations from the Arabic, accompanied by the Arabian commentators, and then through translations from the original Greek text, imported from Constantinople. The Renaissance itself is marked by the recovery of practically the whole body of Greek literature as we possess it to-day, including the works of the "divine" Plato. From Anselm and Abelard to Thomas Aquinas, and from Thomas to Giordano Bruno, the transition is like a promotion from one grade to another of a huge school system, in which Europe was prepared for Bacon and Descartes.

It is to be observed, however, that during the darkest of the dark ages there was no physical reason why the western thinkers should not have enjoyed the utmost familiarity with Greek philosophy. There was always some intercourse with the Eastern Empire, where the study of the Platonic and Aristotelian philosophies had continued uninterruptedly—as the study of Confucius and Mencius has continued in China. But the westerners were not ripe for Greek philosophy. They were unconscious of their lack. Once they became aware of it, it was promptly satisfied. If their progress is measured by the extent of their Greek library, so the order and extent of the accessions were, at least in part, determined by their readiness to receive them. It is sometimes said that the philosophical Renaissance is due to the influx of Greek scholars into Italy, consequent upon the fall of Constantinople. That is, indeed, one side of the matter. The other side is this: that Italy was by that time

prepared to be a refuge for Greek scholarship, and that for a generation Greek professors of philosophy had been busily teaching there. The triumph of the Turks merely expedited a process that was already well begun.

Finally, the philosophy of the Renaissance was marked, not only by a revival of ancient doctrines, but by a revival of philosophical activity, which did not stop short with the learning of old lessons. The Florentine Academy is no less characteristic of the times than Ficino's translation of Plato. The Italians went to school to the ancients; but they became filled with the spirit as well as the precepts of their masters, and they proceeded to accomplish much that had been beyond their masters' utmost hopes. Modern experimental science was born of Platonism. The roots of Galileo's thought are to be found in the idealism of the *Phaedo* and the *Republic*. But it is none the less a marvellous new thing. Plato taught more than he ever knew.

Let us summarize the principal points which have been made above. The diffusion of culture from one society to another is an essential condition of any considerable progress. Isolation, to whatever cause it may be due, tends to bring about an arrest of development. The controversy of anthropologists over the possibility of independent parallel developments is not of prime importance in this connection; for in any case it is manifest that diffusion is a universally active principle of social change. All cultures consist in the main of borrowed elements. But diffusion does not take place with mechanical necessity. Only those absorb a trait who are ready for it; and they take over only so much as they are ready for. The process of borrowing is itself a development, just as is the education of the individual child. Finally, the process need not stop short with the reception

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of the foreign material. This is inevitably modified to some extent in being assimilated to the new culture-environment. Under favorable conditions the modifications assume the character of a fresh creation, and another chapter is added to the history of the advancement of culture.

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CHAPTER IX

THE UTILIZATION OF TOOL MATERIALS AND EXTERNAL SOURCES OF POWER

ONE of the most confident assertions of an older generation of anthropologists was that "civilization" is impossible without iron. In view of recent discoveries with respect to the attainments of the Mayas, one would now hesitate to affirm this. But the proposition needs only a little toning-down to be unimpeachably true. What we call "civilization" may be possible without iron; but the possession of iron tools has none the less been a most important favoring condition for the rise of the higher cultures.

Why is this true? And, to broaden the inquiry, why has the utilization of new tool materials repeatedly marked the great turning-points of human progress? That is one question which we shall try to answer in this chapter.

With it we shall associate another question, suggested by the recent history of civilization. When an estimate is made of the industrial progress of different nations, one very convenient and significant measure is the comparative consumption of energy, especially in the form of coal. We Americans are especially predisposed in favor of this mode of measurement, because it puts us far in advance of all other peoples. Now there can be no doubt that it reveals a great deal; and we may be tempted to say that the power-driven machine means for the advancement of humanity to-day just what the tool has meant in the past. Is this

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strictly true, and to what extent does the utilization of external sources of power operate as a factor in social evolution generally? This is the second question which we shall have before us, and for which we shall try to find a suggestive, though hardly a conclusive, answer.

TOOLS

We form an erroneous notion of primeval man if we imagine him with empty hands. The ability to strike and the ability to throw at a mark are instinctive in us—as truly instinctive as the erect posture with which they are closely connected; though there is evidence that the throwing instinct has not been so thoroughly acquired by the female as by the male of the species. We should picture our Pliocene ancestor with a club. With it in his hands he was a formidable antagonist, easily holding at a distance any but the largest carnivora and maiming and killing the grazing animals which he stalked. Or we should picture him with a stone in his hands; and if we are inclined to doubt its effectiveness as a weapon, we may recall that as late as the Homeric Age warriors, whose artificial weapons had failed them in their need, had resort, not in vain, to the stones that lay upon the field of battle. The ancient theory, still held by some of our social psychologists, that the first men lived in constant danger from beasts of prey, and that the earliest human society was based upon the apprehension of this danger, is altogether groundless.

The club and the primitive missile are older than all arts. They are found rather than shaped, or are shaped only in the rudest manner; and the materials of which they are made, like the animals and fruits of the primitive diet, are

the direct bounty of nature. They can hardly be called tools, for that would imply more artificiality. The pointed stick with which one can turn up a root, and the jagged stone with which one can tear and scrape, deserve the title no better, though there is no reason to suppose that these are associated with special instinctive aptitudes. The tool is deliberately and with distinct foresight fashioned with reference to the use to which it is to be applied. Thus if the digging-stick has been pointed and hardened in the fire, or the scraper has been chipped to an edge, the case is altered and we are dealing with a true tool.

The hand has been called a "generalized" organ, since its structure fits it for so many uses. In the same way we may say that with the hand is connected a certain "generalized" ability of manipulation, which is part of the hereditary endowment of the race, and which in each individual is ready to be developed in any particular direction by practice.

The tool is, as it were, an extension of the human organism, and the evolution of tools is a curious appendix to organic evolution. Generally throughout nature the evolution of behavior has depended upon the rise of special organs adapted to the new requirements. Man's powers have undergone the most extraordinary increase in intensity and variety without any important modification of his anatomy. The division of labor exhibits this fact most clearly. Men engaged in the most widely different occupations are distinguished only by minor traits, such as arise from special postures and forms of exercise, and these do not affect the organic inheritance. But while man's body remains unchanged, it takes to itself different extensions; so that the advantages of specialized structure are combined with those of universal adaptability. The evo-

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lution of man's behavior is social; and—apart from that behavior which consists essentially in the use of speech—the history of the tool everywhere underlies it.

As the student looks along the shelves of an archeological museum, he sees but one of the three principal aspects of this history. He sees the series of tools themselves, and with close examination he is able to distinguish not only the general type and particular pattern of each specimen but traces of the workmanship that produced it. But these tools are dead. They are like the lopped-off limbs of an extinct animal. The living tool is in connection, not only with muscles and sinews and a skeleton frame, but with a central nervous system in which the skill of its manipulation is located. Just as hand and brain have developed together, so have tool and brain. Without acquaintance with the skill, we can have only a shallow appreciation of the instrument. One scraper or one arrow-straightener will look as good as another to the student, when to the hunter who habitually uses such things the one is excellent and the other barely passable.

To a superficial view the very object of many tools is to dispense with skill; but even if that is their object it is seldom more than a small part of the effect of possessing them. The draughtman's pair of compasses may serve to illustrate this principle. It is hard to draw a circle of any desired size with the free hand. It is infinitely easier with the compasses. A mere child with the help of the instrument can do at least as well as the most practiced workman can without. But it would be a mistake to suppose that instrumental drawing is easier than free-hand drawing. The possession of the instruments brings with it new and unheard-of developments of skill. For the applications are extended; new demands are created; and an exactness and

finish are required which to the untrained onlooker seem almost uncanny. This is the third aspect which the complete history of the tool involves: the *demand*. The tool itself, the skill in its manipulation, and its utility in industry have developed together in constant interaction.

Most complicated and various have been the social effects of the evolution of the tool. No aspect of culture has been left unaffected. Men have been enriched by an immense increase in the amount and variety of the products of labor. The "standard of contentment" has been raised, and ideals of beauty and seemliness have been fostered. Every occupation to which men give their lives has been repeatedly modified or even revolutionized. The progressive division of labor has been favored by the apprenticeship necessary for the acquiring of special skill. Markets have been called into existence, and intercourse between communities has been encouraged. Skilled artisans have generally formed a class apart; and, not being, like agriculturists, bound to the soil, they have been the more able to appreciate bonds of common interest independent of the accidents of birth and propinquity. Hence their guilds and crafts have been nurseries of the spirit of civil liberty. These are a few suggestions of lines of historical causation which it would require a long labor to trace. With sufficient industry and a little ingenuity it would be possible to write a systematic account of a great part of human progress in direct connection with the development of tool-making.

TOOL MATERIALS

In all this there is one determining condition, which, if not absolutely fundamental—for nothing in the phenomena of social life is that—is through long periods of time rela-

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tively so; namely, the range of tool-materials. To the Pliocene man, if, as we may suspect, he used stones only as missiles, no particular kind of stone was of especial importance. All that was needed was something big enough, hard enough, and heavy enough to hit the mark with smashing effect. But when true tools, even of the simplest character, began to be shaped out of stone, one kind was no longer just as good as another. It is not every grain and texture that will permit of chipping to a smooth point or a fine edge that will give reasonable wear. The very possibility of making tools depends on the finding of suitable materials; and the whole technique of tool-making is based upon the qualities of the materials that are utilized. In some localities sea-shells are used instead of the usual stone. Here, again, one shell is not as good as another; and an essential element in the local culture consists in knowing how to pick out the better shell and how to take advantage of its peculiar qualities in adapting it to the use which the artificer has in view.

Geographical determinists exaggerate the importance of this factor, because they overlook or neglect the fact that the range of available tool materials is itself a social product, not a mere gift of nature. As demands increase and finer skill in the use of tools is developed, the choice of tool materials becomes of necessity increasingly discriminating. The wood for an ax-handle may be restricted to a single kind of tree; but that is because it makes an appreciable difference to the expert wielder of the ax. But experience also widens the choice, not only by enlarging men's acquaintance with raw materials, but also by making new materials available through the invention of new processes of manufacture.

But, however we may criticize the geographical theory,

the importance of the tool-materials as a determinant of culture remains. Major phases of social evolution have been ushered in by the introduction of new materials—as in the case of bronze and iron, to recall the most obvious examples. At such times many, if not most, of the principal industries of men have been profoundly affected, and great new industries have sprung up. Moreover, man's intelligence and taste have profited. Better tools facilitate the acquirement of finer skill; and this fosters a more varied demand, and hence, directly and indirectly, a richer social experience. Logical systems of ideas and hierarchies of values are constructed as well as houses and ships, robes and tapestries.

It should be observed that when new properties of a long familiar substance begin to be utilized, it is in effect very much as if a new substance were introduced. Not the substance in the abstract, but the substance as worked upon, is what counts. The greatest of all changes in human life are probably those which we associate with the transition from paleolithic to neolithic industry. But in this case it is not the introduction of a new tool material that marks the change—only the application to stone of a process of grinding analogous to that which had for many thousands of years been practiced upon bone. Copper is sometimes used for a limited number of purposes by neolithic peoples who find it in its virgin state. They pound it into shape and polish it, but can not conceive of any other method of working it. The failure to comprehend the most characteristic potentialities of the metal prevents them from profiting very greatly from its possession and use.

The superiority of a new tool material, which wins it a welcome, is of course always with reference to old uses; for it is only in this respect that it could be appreciated. The

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new uses come later, and they then imply a modified mode of life, in producing which many factors may coöperate. The history of tools, and particularly the progressive utilization of tool materials, affords ever-recurrent illustration of the principle of the interaction of end and means. The end comes before the means, and only gradually does the possession of the new means lead to the emergence of other ends. The superiority may consist merely in the greater abundance of the local supply; as when a migrating tribe is driven to resort to substitutes for materials which were common in its old home. Or it may consist in the elimination of intrinsic defects in the older material. Occasionally in the former case, more often in the latter, a reaction of the means upon the end occurs. The new qualities suggest or call for changes in the application. New potentialities are discovered, and greater skill in the exploiting of them is developed. The demand is thus enlarged, and this amounts eventually to the creation of new demands. However, long established habits are not easily changed. Men are often made unhappy by particular failures without ever for a moment feeling any real discontent with their means of doing things. The bronze ax-head is obviously for most purposes an improvement on the best that can be had in polished stone. The most conservative of men can see that—except where magical or religious considerations interfere. But from the superior ax to the array of bronze wood-working tools with which the houses and ships of the Heroic Age were built is many a long step forward; and these steps are not taken before they are required.

The general superiority of the metals as tool materials consists in the fact, first, that though softer than the harder stones they are far less brittle; secondly, that they have no grain, as all wood and much stone has; thirdly, that they

can readily be given any desired shape and size without restriction by the original dimensions of the pieces in which they are obtained. In the last two respects they are like the potter's clay. It is well to note that these characteristics have been not only of direct importance for industry, but of an indirect importance which is perhaps even greater, on account of their influence upon the development of human intelligence. The metal tool owes its entire design to the purpose to which it is to be put; or, where this is not the case, the exception is due to the conservatism of tradition. The progressive adaptation of the tools to an increasing variety of uses has thus taught men, as nothing else could, the mechanical properties of the substances they have *worked upon*. In order to make a good carpenter's chisel a great deal must be learned about wood; for the chisel will not be better than the joint which the carpenter expects to make with it, and the joint will not be better than his feeling for the toughness and elasticity of the wood permits. The great virtue of the metal, then, is that its inner structurelessness, together with its almost infinite capacity for taking and holding any conceivable form, makes possible the perfect adaptation of the tool to the requirements set by the character of the structural material.¹

It is a mistake to suppose that the extracting of the metal from the ore is what fundamentally distinguishes the true

¹ Clay has taught a different lesson, but in a somewhat analogous way: a lesson in beauty. Its plasticity, its absolute conformity to the potter's shaping impulse, has made his thumb the symbol *par excellence* of omnipotence. The goat-skin and the gourd, as liquid-containers, are taken from nature with very little alteration of form. The clay, as it is dug, is good for nothing, and it makes no suggestion of any shape that shall be impressed upon it. It is without form and void. The urn is a creation. Add to this the fact that clay is heavy enough to make any superfluity of material in any part of the completed product distinctly objectionable, and ideal conditions are given for the development of the sense of symmetry.

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metal-age peoples from metal-using peoples of inferior culture. Whether the metal is found or smelted or imported is of minor importance. It is the use that is made of it that counts; and the importers may utilize it quite as extensively as the producers. Egypt and Babylonia imported their bronze; but there is no reason to suppose that they did less with it than the bronze-producing peoples upon which they were dependent for their supply.

Another mistake, which the most elementary and widely known facts ought, one would think, to have been enough to prevent, is to suppose that the possession of a tool material is necessarily of less value when the methods of producing and working it have been learned from others than when they have been discovered at home. Few arts anywhere are indigenous. It is not likely, for example, that any of the peoples of western Europe are descendants of the first producers of iron. The greatness of man rests largely upon the fact that he is so good a borrower. It is not at all uncommon for an art which has languished among the people of its origin to undergo a swift and mighty growth when it passes into other hands. To explain the very low level of culture of certain African tribes, which know not only how to forge iron implements but how to obtain the metal from the ore—to explain the anomaly by saying that they have learned these things from others² is very inadequate. Iron is only a potentiality. What it becomes in the way of actual accomplishment depends upon other factors, especially upon the factor of *demand*. It can not fail, indeed, to react upon the demand; but what the reaction is depends necessarily upon what the demand already amounts to. That is why iron may, century after century, be used for

² Cf. F. Müller-Lyer, *Phasen der Kultur*, p. 90 f.

knives, spear-heads, and personal ornaments, and very little else.

IRON AND STEEL

The period of higher civilization is not improperly known as the iron age, for it is clear that without iron human progress is seriously impeded. The softer metals—even the hardest bronze—are for fine work inferior to certain stones, and are unable wholly to replace them. It is only with the utilization of iron that the stone age is altogether left behind.

But iron is, practically speaking, a generic term. What is used is not the metal, but a whole range of mixtures of the metal with carbon. Wrought iron, steel, and cast iron are distinguished by the smaller or larger proportion of carbon which they contain; though through a recent corruption of the language the term “steel” has come to be applied to wrought iron of superior quality. Steel is of especial importance as a tool-material; and while the ancients had no distinctive name for it, it is believed that they were well acquainted with it. Wrought iron is relatively soft; cast iron is brittle. Steel when heated and then suddenly cooled becomes extremely hard; and though the process also makes it brittle, the brittleness can be removed, with a slight loss of hardness, by tempering, *i. e.*, by a slow reheating.

Now the general principle of the dependence of civilization upon the supply of tool-materials is once more beautifully illustrated by the history of iron and steel. In ancient times and down to nearly the end of the middle ages, wrought iron and steel were made directly from the ore. Expressing the matter in modern chemical terms, we may say that the charcoal which was used to deoxygenize the ore also supplied

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the carbon for the alloy. This method gave a very imperfect control of the proportions of the carbon content; and, besides, the metal, as obtained, was imbedded in a great mass of foreign material from which it had to be separated by prolonged hammering. One of the epoch-making inventions which prepared the way for modern civilization was a labor-saving *indirect* process. The ore was wholly converted into cast iron, which was run off in a molten condition, almost free from impurities. Then, by re-melting in contact with air, the iron was—as we now interpret the operation—stripped of the excess carbon. The cheapening of the product gradually made itself felt in a greatly increased consumption, also in a notable increase in the demand for charcoal, which resulted in wide-spread deforestation. For centuries efforts were made to substitute mineral carbon for the relatively expensive charcoal, but without success except on a very small scale. Twenty-five years before the invention of the steam-engine and of the spinning and weaving machines, the use of coke was successfully inaugurated. Almost at the same time the melting-process was applied to the purification of steel—which fuses at a much higher temperature than cast-iron—and an ample supply of the finest tool material was thenceforth assured. Without these two complementary inventions, the industrial revolution could not have proceeded far.

Since the beginning of the nineteenth century the swift rise of the science of chemistry has added a new chapter to the history of iron and steel. In part the effect has been due to the direct application of the new scientific knowledge; in perhaps greater part it has been due to the employment of the new scientific methods of research. Not much in the way of general theory is known even today about alloys. The information which we possess has been almost entirely

acquired by the patient trial of all manner of particular mixtures, with no better guidance than vague analogies. Recently the chemistry of the metals, and especially that of iron, has made a new leap in advance. Several allotropic forms of the element—different as red and yellow phosphorus are different—have been detected, and their properties are being carefully studied. It is obvious that a satisfactory theory of alloys could not be worked out while confusion still reigned with regard to the elementary substances; and it may well be that now a rapid systematic development of the subject will occur. The effects of such a development upon industry and upon civilization in its entirety no one would dare to predict.

THE MACHINE AND THE SOURCE OF POWER

The distinction between the tool proper and the machine is a popular rather than a scientific one, obvious enough when extreme instances are cited, but impossible to define with precision. The physicist cannot help us to a definition; for the notion of a tool lies altogether outside his province, while from his point of view even a crowbar is a machine, and a typical one at that. But, as we so often find in the study of society, a distinction which is vague is not for that reason unimportant, for the terms which mark the stages of a development are never otherwise distinguished. In this case the critical point may be said to be the appearance of the *wheel*, though it takes more than a wheel to make a machine and not every machine contains one. By means of the wheel, it becomes possible to set up cyclical and oscillatory processes which, without care on the operator's part, repeat themselves indefinitely; while it further provides a means, not only for the transmission of power, but also

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for maintaining a continuous leverage through which either speed or force is multiplied. As we first meet with the wheel, it has, indeed, a somewhat different function. It is the *traction-wheel*—an improvement on the roller-log—which, attached to a drag, makes it easier for a man or an ox to pull. As the potter's wheel it is something of a higher nature, marking the endowment of man with a new faculty.

To appreciate the general meaning of the machine, we must note that man's activities differ greatly in the degree of uniformity which they exhibit. We see this difference, for example, between walking on level ground or up an even slope, and making one's way over rough country. The skill which men acquire is similarly of two kinds. Practice gives ease and accuracy, and enables one to do, without thought and even without attention, things which the beginner finds difficult or even beyond his utmost powers. But there is also the skill which involves seeing ahead and the occasional exercise of deliberate judgment. Now the invention of the machine depends upon the analysis of operations into two sorts of components, those which involve, and those which do not involve, anticipation and judgment; and, if necessary, the further analysis of the latter sort into simpler elements. Both analyses often involve a high degree of conceptual abstraction. In the work as previously performed, even the primary components may not have a distinct existence; as the shaping of the jar by hand by no means consists of the motion of the wheel *plus* the motions with which the hand accompanies the wheel. And even where this separation can easily be made, the breaking-up of the "mechanical" portion of the task into elementary turnings and the pushes and pulls connected therewith remains a formidable problem. For, while the machine does what the organism does, its mode of operation

is, in general, utterly different. Whereas the nervous system liberates energy in a whole array of muscles that bend and straighten and twist independently, and the necessary synchronism is secured by practice, the machine has almost always a single source of power, and any synchronism which may be necessary must be secured either by a continual human interference or by the mechanical transmission of power from one moving part to another. There is thus, except in the simplest cases, no suggestion in man's work as to how the machine shall be constructed to accomplish the same result. The machine is a new thing under the sun. For its great modern development it has, indeed, had to wait upon the emergence of adequate mathematical conceptions, especially those of the infinitesimal calculus.

The machine being senseless, the way is opened for the ever larger utilization of natural forces in its operation. It matters not in principle, if these are still resident in man's own body. The substitution of the full arm turning a crank, or of the foot pressing upon a treadle, for the finer and weaker flexions of the wrist and fingers is a gain of the same kind as is marked by the coming of the windmill or the steam-engine. Still, though the kind is the same, there is a vast difference in degree; and we do not depart very far from the substantial truth of the matter when we describe the machine as a means for the utilization in industry of forces external to man.

The play of social interactions is well exemplified in the relation between the machine and the source of power. The improvement of the one and the enlargement of the other have, roughly speaking, kept pace together. The earliest use of external power was, of course, in travel and transportation. The use of the ox to pull the plow is closely analogous, and it is the only productive application of ani-

mal power which is of great importance; for the treadmill has never bulked large, and the recent use of horses in connection with a variety of farm implements is rapidly giving way to gasoline. Wind-power is essentially a substitute for water-power. The latter is in many localities unavailable or deficient in quantity, especially during long periods of drought or freezing. But wind-power has generally the grave defect of being extremely capricious. It can be used for pumping water which is to be stored until needed, or, somewhat less conveniently, for grinding flour. Running water has therefore been, until the very recent past, the principal source of industrial power, aside from man's own muscles. It was used for the simplest processes, such as grinding and, more recently, sawing, in which no problem of synchronism was involved.

The age of machinery dates from Watt's invention of the steam-engine, in the second half of the eighteenth century. For though the impulse to mechanical invention had been felt much earlier, the finding of the new source of power gave it an extraordinary reinforcement. The steam-engine itself was no happy inspiration. It was the outcome of a long course of experimentation, in which Watt himself was by no means a pioneer. It came in response to an eager and persistent demand, and its importance was, in a general way, well understood. Any desired amount of power was now available at any point to which fuel and raw material could conveniently be brought, and where workmen could be assembled and the distribution of the product initiated. It was like making a waterfall play at will; indeed one of the early models of the steam-engine was designed to pump water up to a high reservoir, so that the energy of its return to a lower level might be utilized in turning a mill-wheel. The opportunity thus offered to

mechanical inventors on the one hand and to men of business enterprise on the other was unprecedented, and both classes were prompt to seize it. A spinning-machine was perfected at about the same time as Watt's engine, and mechanical weaving came soon after; and with the help of steam the exploitation of these inventions proceeded rapidly. A stream of new inventions followed; and down to our own day this has steadily increased in volume without the least sign of a threatened diminution. There are now few industries in which steam-driven machinery does not play an essential part—to say nothing of the revolution which the locomotive and the steamship have wrought in transportation.

Recently two other important sources of motive power have been introduced. The gasoline engine and other devices by which the energy of combustion is directly utilized without the mediation of steam are of little importance in industry, but of the greatest importance in some forms of transportation, where economy in the bulk and weight of the fuel and of the engine itself is a prime requisite. Electricity, on the other hand is a universal substitute for steam, and has in addition new potentialities of its own.

One great advantage of electric power is that it can be instantaneously conveyed over short or fairly long distances, along easily established lines. The economy and the regularity of service thus assured are such that, if it were not for the difficulty and expense of disturbing established arrangements, it would be advisable to burn at the mines the larger part of the coal intended for industrial purposes and transmit the energy in the form of electricity. Furthermore electricity has in water power a permanent source of supply. The extensive use of oil-products is necessarily only an episode in the history of civilization, the

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available quantities being small; and coal itself is far from inexhaustible, though the hardy calculations which have been made of the time of its final disappearance differ by centuries or even millenniums. In the case of both oil and coal, however, what is far more seriously to be reckoned with than exhaustion is a gradual increase in the cost of exploitation. Meanwhile the utilization of water power in the form of electricity has only begun, but it is increasing very rapidly.

The steam-engine is related to the mills which utilized the force of wind and water and the tread of animals, very much as the metals, as tool materials, are related to stone. The stone is *found*, a gift of nature; and the shaping of it is a straight forward process. A mind thinking in pictures can comprehend one step after another without difficulty. The metal is originally obtained by means of hidden processes which no imagination can picture; and its properties, when it has been obtained, are not immediately evident to sight and touch, but must be brought out by heat and by peculiar mixtures. Wind and water and the strength of animals are found. Superheated steam is not. Fuel must first be burnt, and water boiled, and the steam itself must be confined until it acquires the degree of expansive force needed—and no more. And while the utilization of power in the form of directed pressure is a simple matter enough, the utilization of the expansive force of steam is far from simple. Though it involves no obscure physical or chemical change, it does involve a mechanical synchronism which is almost as baffling to the imagination—which, indeed, was at one important point beyond Watt's own unaided inventive powers. At first a continual human interference was necessary, and this was eliminated only by an afterthought.

It will not do, however, to press the analogy too far. The

mystery of the metals was brought under the categories of magic, and an exact following of mystical formulæ was sufficient to ensure a practical success. The invention of the steam-engine was a triumph of applied science; and the rules which were followed in its construction, though they might for the individual mechanic be rules of thumb, and even for the engineer were often merely empirical, were never conceived as having a supernatural significance. As a consequence, the steam-engine has had an adaptability to special conditions and a capacity for rapid improvement which belong only to the works of reason.

All this and more may be said of the dynamo and the electric motor. For their construction and utilization a whole new fund of experience had to be acquired. The behavior of common things in common life only suggested analogies for the understanding of electrical phenomena. It was necessary to build up a new system of concepts, as well as to carry through a new system of experiments. Not for nothing did Faraday persist in calling himself a "philosopher." The scientific principles thus gained had to become incorporated, not only in the knowledge, but in the imagination of engineers. They had to learn to dream in a new language. And, finally, the care and management of the new equipment had to become the second nature of a host of skilled workmen.

THE MACHINE AND THE WORKMAN

In certain respects the machine may be regarded as a glorified tool, both in its essential nature and in the social consequences of its development. In other respects it is very different from the tool. Like the tool it has greatly increased the sum of human wealth and power. That is a

topic which need not be enlarged upon. Like the tool the machine in its development has followed lines that were traced for it by an active social demand. As a matter of fact, it is still essentially *labor-saving*. It has created little. For the most part it merely does rapidly and on an immense scale what had long been done in humbler fashion by other means. The inventor of machinery has had his task set for him by definite requirements of industry. His problem has been one of ways and means; and the reaction upon the ends has not gone far enough to produce radically new directions of effort.

Very often the only advantage of the machine lies in the cheapness of its product. It remains an inferior substitute for the tool and the skilled tool-user. "Hand-made" is a term of praise. It is especially where taste is involved that the inferiority of the machine is manifest. The uniformity of its way of doing things is hard to reconcile with the claims of beauty; for beauty requires an infinitely delicate adjustment of part to part. The sewing-machine makes a single kind of stitch with mathematical precision. The skilled needle-woman makes a dozen or more different stitches, and uses each where it is most appropriate. When the machine tries to rival her, its efforts are futile, and may even be ridiculous. Real hemstitching is beautiful, but there is very little charm attaching to the imitation. But often the superiority of the hand goes farther. The flexibility of its operations, and the attention to detail which this flexibility invites, makes for thoroughness and strength and permanence; while the machine-product goes early to the scrap-heap.

It is evident that the relation of the machine to skilled labor and to intellectual development generally is a very different one from that of the tool, and far more compli-

cated. In one sense it may be said to promote a far greater skill and a far higher grade of intellectual culture; but at the same time it tolerates and even fosters a vast deal of uncouth stupidity. The physicist whose research makes the invention of the machines possible; the inventor whose wide-awake intelligence and ingenuity and patience are responsible for the general type of the machine; the designer who adapts it to this or that special need; the engineer who installs the machinery, supervises its operation, and keeps it in running order—these are men who live, or may live, at the top of their intellectual powers. But the man who works with the machine is generally in a very different position. He is subsidiary to the thing of steel, starting and stopping it, feeding it, performing those elements of the work which it cannot do, and which in themselves are fragmentary and insignificant. This is not always the case. In the use of the common lathe, for example, the workman is called upon for a constant skillful activity. The machine does nothing alone; it acts only as he directs. Yet even in such a case much has been lost in comparison with free wood-carving. The turner's skill is beautiful to witness, but it is narrowly restricted, just as the type of work which he can execute is limited by the demands of circular symmetry. There is almost no opportunity for creative effort; indeed a great part of the work consists in the slavish reproduction of traditional models.

But the lathe is far from being representative of the tendencies of modern machinery. It rather suggests comparison with the old potter's wheel, from which, indeed, it is said to have sprung. The modern tendency is toward a more and more perfect automatism. Either the work to be done is broken up into a series of definite steps, each of which can be assigned to a separate automatic machine;

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or complete control of a variable operation is secured once for all by means of a *pattern*—like the perforated roll which controls the electrically played piano. Men simply piece out. They do the little things that have not yet been reduced to mechanical terms; and year by year the remainder is further simplified and cut down.

The tool has been called an extension of the human organism, bound up with the skeletal frame and with the muscular and nervous systems, as if it had been produced by the same processes of reproduction and growth. As the blind man feels with his cane just as if the nerve-endings of his finger-tips were really at the end of the wooden stick; so the skillful joiner handles the mallet and chisel, modulating the force of the blow and adjusting the cutting-angle with the same ease and certainty and spontaneity with which he chews and swallows his food. But the machine is no appendage of the almost unskilled worker who stands by it. It would be fairer to say that the workman is an appendage of the machine.

Thus the development of the machine stands in no simple relation to the development of skill. It makes for, and depends upon, a hitherto almost unknown standard of competence in certain men; and it makes no demands above the level of imbecility in a vast number of others. Its influence, moreover, has gone farther than its own immediate domain. It has taught the organizers of industry to think in mechanical terms, and hence to treat the workman himself as a machine—a machine which needs only to be given its pattern by a little habituation, in order to perform a simple operation over and over indefinitely, with all requisite speed and exactness. The learning of this lesson has initiated a social revolution, the magnitude of which is not yet disclosed. As the civilization of classical antiquity rested upon the slave,

so ours bids fair to rest upon the—natural or artificial—moron. The joy of craftsmanship is becoming a thing of the past. There are great industrial establishments in which few positions, aside from the management, can not be filled by any able-bodied man after three days' training. For the great majority of the employees a job means simply the earning of a livelihood. Except for the pay-envelope, there is no human interest in it whatsoever. At the best the work is done with a stupid, stolid cheerfulness; at the worst, with a fierce and bitter resentment.

There has always been drudgery since civilization began. Men have worked hard and long. The peasant, for example, has been weary and heavy-laden. But his work was life—with all the hardships involved in it, and with all the bitter vexations added to it by tyrannical oppression, it still was life, and a great deal of his happiness was in it. The industrial worker of today, even when he is contented with his lot, must seek life elsewhere than in his daily toil. His existence is a deeply divided one, with all the moral perils to himself and to society which such a division entails. This is undoubtedly an important cause of the social unrest of our time.

A large measure of compensation arises from the greater productivity of labor which the machine made possible, and the consequent shortening of the working-day and the increase of general comfort. If the existence of the machine-tender is a divided one, if his heart is not in his work, at least he has very commonly the opportunity to fix it elsewhere. He has a home which is not a hovel, and leisure for rest and recreation with his family and friends.

In other ways also he profits. The states and communities of today have far greater resources than seemed possible before the industrial revolution. They can afford to make

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much more extensive provisions for the general health and comfort and education. Take the matter of education. In the earlier modern centuries the reformers who urged the necessity of some schooling for all children exercised their ingenuity to the utmost to devise means of making the instruction cheap. The teacher was expected to handle enormous classes, either directly or through the medium of pupil-teachers who were to hand on to the rest what they had just learned themselves. When all such measures had proved unsatisfactory, Pestalozzi concluded that for the great majority of children the only possible teachers were their mothers; and since these were generally ignorant women, he undertook to write textbooks so simple and clear that the mother and child could learn from them together. The textbook was thus really to do the essential work of the teacher, who would have little left to do except to hear recitations. The immense sums now available for both elementary and secondary education have utterly transformed the situation. It is within the power of the state to give a sound school training to every child. Now there is no doubt that much of the money has been ill-spent. Waste and extravagance always attend upon newly acquired riches. But improvement has been rapid; and it is putting it mildly to say that the children of the poor of New York and Philadelphia now have provided for them a far better elementary education than was available except to the very richest families one hundred years ago.

When all due account is taken of such improvements in the common lot, the divided life of the worker remains a serious problem. The loss involved in the extraction of all interest from work—above all, the loss in beauty on the one hand and in the honest pride of the craftsman on the other hand—is formidable. This does not mean that the situa-

tion is at all a hopeless one. It means that in consequence of recent rapid social developments an extensive maladjustment has arisen, for the correction of which time is necessary.

THE MACHINE AND SOCIAL RELATIONS

Where steam-power is used in industry, the machine must be set up in close proximity to the engine; and because one engine can run many machines the concentration of work in the factory has been inevitable. Two other causes, however, have contributed to the same result. In the first place, as we have just seen, the work to be done is, in most industries, divided into a number of distinct steps, no one of which has any value without the rest; and each machine is designed for a single step. In the second place, even where that is not the case, the large establishment makes for economy both in the purchase of raw materials and in the marketing of the product. While, therefore, it may seem at first sight as if electricity were destined to break up the great units which steam has formed—since the electrically driven machine can be set up where you please—this is not likely to happen to any great extent. At most we may expect to see “chains” of small factories with a common general management, scattered through villages and small towns, instead of some of the huge units with which we have become familiar.

The machine has thus helped to create a new relation of economic dependence, analogous to that which grew out of agriculture. Like agriculture, and to a greater degree, it has made for concentration of wealth and also for a certain amount of dire poverty. As access to arable land became necessary to the gaining of a livelihood, so for vast

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numbers of men access to the machine has become necessary; for, again as in the earlier case, the very increase of population has made it impossible for all to subsist by other means. The owner of the machine has taken his place beside the landlord. But there is this great difference between the two cases: that the dependence has not, in any comparable degree, become accepted as a just and natural status. The landlord of old days was lord by an almost divine right. His tenants and his servants recognized him as their chief. They felt a duty of loyalty toward him; and if his personal character in any way permitted it, they were ready to give him their affection also. He, for his part, however he might at times abuse his privileges, was generally aware of a certain responsibility for, if not toward, his dependents—a duty at least of preventing their being ill-used by others, and often a certain pride in their prosperity. The democratic revolution has well-nigh destroyed this relation in the agricultural community; and in industry no more than a rare and distant semblance of it has ever existed. The machine-lord has no age-long tradition of headship behind him. He is an invader. The whole period of his dominance, from the first introduction of labor-saving machinery to the present, has been marked by insurrections and threats of insurrection against his power. He, for his part, has exploited to the utmost the advantages of his position, without the feeling that he owes his employees anything beyond the wage which he has agreed to pay them. This is the situation which is summed up in the phrase, “the war between capital and labor”; and it is, perhaps, the most remarkable feature of the social life of our time.

The industrial revolution has resulted in an enormous fixation of wealth as capital. Whole districts are filled with manufacturing plants. These are destructible, and when

destroyed are hard to replace. Even fifty years ago France, still mainly agricultural, recovered with startling promptness from the ravages of a wide-spread invasion. The riches of the soil were undiminished. But what man has made he can unmake; and the chemistry of the nitrogen compounds has given him the means of accomplishing the latter process with great celerity. Industrial civilization has thus a certain weakness of instability from which the older civilization was relatively free.

But this instability has other causes than the fact that machinery can be smashed. The processes of production have become endlessly complex, and with them has grown up a similarly complex organization of exchange. Stop production or stop exchange at any one point, and a rapidly increasing strain is felt throughout the whole industrial system. Above all, if transportation is blocked or the supply of energy—which means coal—is interfered with, widespread loss cannot be avoided. A perception of this fact, not only on the part of miners and railroad men, but on the part of the inhabitants of the great industrial and commercial cities, whose livelihood and whose very life depend upon coal and transportation, has still further increased the strain upon the cohesive forces of civilization.

It is sometimes urged that the present general situation is an illustration of a certain insecurity that belongs to whatever is complex. As we ourselves have noted in another place, the more highly evolved organism or organization has the greater needs, and in this respect it is the more exposed to harm. But, as we recall from that discussion, the advantage is by no means altogether with the simple. Indeed, a common error of both philosophers and scientific specialists has been to suppose that evolution is always advantageous—that the specialization of form and function

and the more perfect coöperation of the various parts ensure a manifest superiority in the struggle for existence. We have seen that this too is untrue. Neither simplicity nor complexity is unconditionally a source of strength or of weakness. And we ought not to forget, with respect to the present industrial situation, that if it contains undoubted elements of insecurity it is not without important compensations. There is this advantage in mere extent: that even the worst local disasters, though they may be felt everywhere throughout the system, scarcely weaken it as a whole. Economic loss spreads far, but it is dissipated as it spreads. A certain measure of safety lies also in the very multiplicity of the interconnections. These may be said to make injury easy; but they also expedite recovery. Not all the bonds are severed at once. If the local injury is widely felt, so also the means of relief flow in automatically from all directions.

If there is any special ground for questioning the security of the new industrial order, it lies in the fact that it is so new. Its development has been extremely rapid, and there is as yet no pause or retardation in the movements which have produced it. For this reason, as we have remarked, it is full of maladjustments, which can only gradually be corrected; and as a whole it lacks the support of the great conservative agencies—a morality of standardized duties and a religion of things as they are. There are perils in such progress as the world has lately enjoyed, as there are also manifest inconveniences; but there is no very convincing reason for pessimism.

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CHAPTER X

THE DEVELOPMENT OF THOUGHT, I

How far is the world in which men live affected by the general forms of their thinking, their intellectual attitude toward nature? How far is their active relationship to the physical environment, as well as the very constitution of society, determined by this factor? What justification is there for taking as the central feature of the history of civilization the development of ideas? This is what we have now to consider; but a preliminary objection must first be dealt with.

One sometimes finds it urged that man is not governed by his intelligence but by his feelings, and that these feelings spring from instincts characteristic of the species but varying in their strength from race to race and from individual to individual. It is accordingly maintained that in the explanation of social phenomena it is always the instincts that must be regarded as the true determining causes, while ideas are to be set down as superficial and inconsequential attendant phenomena.

It should be observed, however, in the first place, that almost nothing is known with respect to man's instinctive feelings, that is above the level of uncritical common sense. The science of the subject has scarcely advanced beyond the stage of rough preliminary classifications. The subject is, therefore, one which lends itself to large but unsafe assertions. As a matter of fact we have no trustworthy means of

comparing the instincts of one race with those of another ; and even in comparing individuals who are well known to us we are limited to a few obvious but insufficient particulars. If a modification of instincts has been determinative of the progress of civilization, we have no present means of ascertaining the fact.

What we are able to observe in men is not the play of instinctive feelings, but that of *sentiments*—the organized modes of feeling, which are evidently social products, and which grow up in each individual under the influence of his social environment. This is true even in such matters as lie closest to instinct, such as eating and drinking and sexual love. What is more conventional than a dinner, except, perhaps, a ceremony of marriage? The polite French visitor, struck with the fact that in American society the cult of adultery has little place, jumps to the conclusion that Americans, as compared with Europeans, must be deficient in “temperament,” that is to say, in the strength of the sexual appetite. That is, of course, an abstract possibility. Against anyone who chose obstinately to maintain it, it would be hard to make out a convincing case to the contrary. There is, however, in such a difference of manners as strikes our visitor, not the slightest evidence of a difference in the fundamental organic traits.

In the second place, the division which is made between the intellectual and the emotional sides of man’s nature is unsound. There is an old comment on this division that is worth recalling: to say that man is governed by his instincts and emotions, not by his intelligence, is like saying that the movement of the ship along its ocean pathway is due to the power of steam, not to the intentions or calculations of the ship’s officers. But we may go further. The organization of the feelings themselves in relatively persistent

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sentiments has always a conceptual basis; that is to say, the sentiment always attaches to an individual, or general, idea. Thus the relatively simple and primitive sentiments of personal affection grow up with the formation of more or less coherent notions of the persons whom one loves; and the sentiment of admiration which is entertained for deeds of courage attaches to a type, or standard, of conduct that is to be considered courageous. As we well know, this standard has varied greatly from age to age and from land to land. Furthermore, it is the conceptual development that, in the main, provides the sentiment with its structure and coherence. It is this that makes possible the acquiring of tact and taste, and of what we call more generally "good judgment." Man is a rational animal in other things than geometry. He is far from being always consistent, but he seldom gets beyond the appeal of consistency. And his rationality is nowhere more in evidence than in the scales and hierarchies of values, which, in the frivolous as in the more serious concerns of life, he habitually recognizes.

HUMAN AND ANIMAL INTELLIGENCE

The question before us is a large one: how, in general, men's ideas are found to differ when the higher are compared with the lower grades of culture, and how the change in the character of the ideas has contributed to the general advancement of culture. Large as it is, we shall perhaps find it more manageable if we extend it to include certain notable differences between man and the higher vertebrates generally.

According to the common traditional view of the matter, man is peculiar in that he alone has the power of abstraction, and to this fact his intellectual superiority is largely

due. The term "abstraction" is not now fashionable. What is more important, we have learned to see a difference in degree where the older psychologists saw a sharp difference in kind. The anthropoids, particularly the chimpanzee, have been found to be so very human, that it is a question whether in mind as in body they are not nearer to us than they are to the other apes. All things considered, however, there is little room for doubt that the traditional view is substantially correct. Even the most intelligent dog shows clearly by certain limitations of his behavior that he lacks altogether the power of fixing his attention upon such spatial relations as longer and shorter, upper and lower. In the case of practical problems, such as a very stupid man would solve at a glance and a bright chimpanzee could be brought to solve in time, the dog must be taught how to act as a *trick*. He can be taught, for example, to bring a certain box to a certain place on the floor of a room; to place a certain other box on top of the first, and a third on top of the second; and so to reach an object that has been placed on a high shelf. But the dog does it with an entire lack of comprehension; and when a new trick is to be learned, which calls for very different movements, but is based, nevertheless, upon the same relations of size and position, the poor animal has profited not at all by his experience.

It is evident that man's superiority in such a situation is due to the fact that he can fix his attention upon the shape or size or spatial order of things, in distinction from the things as such. That a similar advantage attaches to the attentive observation of kinds and conditions of things is as easily shown. Our efficient handling of new emergencies rests upon our ability to single out significant features and to act accordingly. If this is to be called "abstraction," then we may say with the old psychologists that man is alone

—or practically alone—in showing evidence that he possesses abstract ideas.

Some of the old writers draw attention to the fact, that in all our judgments the setting-over of what we assert, against that of which we assert it, involves an abstraction of this sort. The animal, with eyes like ours, sees the green leaves and the white snow; but, unless we greatly underestimate his powers, he does not perceive *that* the leaves are green or *that* the snow is white. He lives in a world—shall we say?—of things, but not of facts. This last expression may remind us that in isolating the given quality or relation from the totality of the object as presented, we equally isolate it from ourselves. The green of the leaves is but a passing phase of perceptual experience. But that the leaves are green is something that we know and can affirm, an item in the real world in which we find ourselves. Again, the abstraction and the concurrent objectification appear in an intensified form in logical inference. When from a given set of premises, independently of their truth or falsity, a certain conclusion is seen necessarily to follow, the necessity is not felt as belonging to the reasoner—as if it were a compulsion in him to think in a certain way—but as belonging to the nature of things. The case of the numerical formula is closely similar. Numbers are the very type of abstractness; and the type of a certainty which is wholly removed from the sphere of individual impressions is that which we recognize in $2 + 2 = 4$.

Along with abstraction and predication and with the recognition of objective facts, goes a certain autonomy of man's intelligence with respect to his emotions. To be sure, his intellectual processes, like all his other activities, are prompted and maintained by feeling. But the same qualities and relations of things enter into the occasions of all

sorts of emotional excitement; and the facts preserve their indifference no matter how we feel about them. Hence the recognition of facts has a relative stability as compared with the passing inclinations. Man has even developed an intellectual curiosity, a craving to know the how and why, foreshadowed in the play of his simian cousins, but amounting none the less to a specific trait. If our observation of animals does not mislead us, their ideas remain closely bound up with the feelings aroused by the situation of the moment. The impersonality of man's regard——

For to admire and for to see,
For to be'old this world so wide,——

is altogether beyond them.

Paradoxical as the fact might seem if it were not so familiar to us, this liberty of the human spirit to devote itself to generalities, independently of their immediate or even possible importance, is of inestimable value to the individual and to society. It involves an immense amount of wasted effort; but in return it makes possible to man his insight into those indifferent features of the world—the laws of nature—which in all manner of situations determine the issues of life, now for good and now for ill.

CHARACTERISTICS OF PRIMITIVE THOUGHT

(1) PARTICULARITY

The same elements of intellectual superiority which distinguish man from the other animals, also serve, by their differences in degree, to distinguish men of higher from those of lower civilization. This does not mean that any continued organic evolution, such as that by which man

"set up a superior brain," is to be assumed in order to account for this progress. It is quite possible that the whole phenomenon is a social one—that it is the social environment of primitive man that gives to his thoughts their peculiar character, and that without any substantial change in our own heredity our greatly altered social environment is responsible for the modification of our intellectual character. The change is no less a real one, and its reaction upon all other aspects of human life is no less important.

In the first place, the thought of primitive man is singularly concrete as compared with ours. It is a succession of highly individualized perceptions. He does not indulge much in generalities, even when these would seem to us most pertinent; he sticks to examples. We see evidences of this in his vocabulary; we see it also in the character of his conversation; but it is perhaps most clearly visible in his technique.

The popular opinion, which we often hear so confidently expressed, that uncivilized men use only a few hundred words, is strangely at variance with the facts. The "jargons" that sometimes come into existence in the intercourse between civilized and uncivilized men are, indeed, relatively poor; and since the former are apt to take these for the real languages of the latter, it is not hard to see how the erroneous opinion which we have just mentioned arose. But while savages have an ample supply of words, it is, according to our standards, a curiously ill-balanced supply. There are an extraordinary number of words which express with pictorial vividness particular ways of acting—words like our own *toddle*, *stride*, *stalk*, *stagger*, *shuffle*, *plod*, *trudge*, as compared with *walk* and *go*; or like *scour* and *scrub* as compared with *wash* and *clean*. Sometimes the more general term is wanting; sometimes it exists, but there

is, as compared with our own usage, a greater tendency to use the more specific term. Savage vocabularies also contain many words like *whiz* and *cuckoo*, which are frankly imitative of the sounds which they denote, or the sources of which they denote.¹

The folk-tales of primitive peoples are vivid if nothing else. Incident follows upon incident in picturesque succession. But the narrator often leaves us somewhat in the dark as to what his story is driving at. He keeps close to the particulars and presents them with a minimum of express interpretation. It is not that he is incapable of giving more in the way of explanation if he felt the need for it; but neither he nor his auditors feel such a need. What takes the place of conceptual analysis is the emotional attitude of the story-teller and the quick sympathy of the audience. It matters little what the incidents mean in abstract terms when their dramatic value is so plain.

The detailed knowledge which primitive men possess with respect to their natural surroundings and the means of dealing with them is immense, and the civilized explorer or settler is wise if he learns from them and imitates their methods as far as possible. But there is curiously little in the way of generality in this knowledge. The savages do certain things in certain definite ways, with extraordinary skill

¹ These facts are often exaggerated, and English illustrations are cited here in order to emphasize the point that the differences in question are only matters of degree. In a lesser degree we can often detect the same kind of difference between the Greek or Latin vocabulary and our own. The common Latin terms for the cardinal points and for the various winds may serve to illustrate this. Instead of "abstract" terms like *north*, *south*, *east*, and *west*, we find the relatively concrete expressions, *ad septentriones*, *ad meridiem*, *in orientem solem*, *ad occasum solis*; and instead of the classificatory *north wind*, *south wind*, etc. we have proper names for the winds: *aquilo*, *auster*, etc. The sort of connotation which attached to these modes of expression we can appreciate if we think of such survivals as the French *midi* (for southern France) or *bise* or *mistral*.

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—as the Indian makes his birch-bark canoe or the Eskimo woman sews her water-tight boots. But let them be set a problem, which to the analytical understanding of the civilized man would appear to call for only a slight variation in procedure, and as often as not they are helpless. Accordingly, from tribe to tribe similar articles will vary in ways that are almost as distinctive as the marks that differentiate the various species of a biological genus; and this not from a spirit of conservatism alone—for the superiority of a foreign type may be manifest and openly recognized—but from inability to see how the familiar procedure is to be varied so as to produce a desired alteration in the result.

The particularity of primitive methods is seen at its maximum in the formulae of *magic*—a topic which we shall shortly have to consider. Here the reader may be reminded, first, of the notorious exactness with which the formulae must be followed—the slightest departure from precedent may destroy the value of the whole operation—and, secondly, of the fact that the different formulae cannot be reduced to any sort of logical system, the connection between them amounting only to a variety of suggestive analogies. It may be added that in many of the industrial operations of primitive life, the physically effective steps are interspersed with magical precautions which are regarded as absolutely essential to success, and which could not be correctly performed if at other points the procedure were materially altered. Besides, the savage mind not seldom attributes a magical significance to steps which have an actual physical bearing on the result. Thus the irrational character of magic extends itself over a great part of the economic activity; and we have an additional reason for the fact that things must be done just so and not otherwise.

(2) DIRECT RELATION TO PRACTICE

In the second place, when we examine the concepts that make up the structure of the uncivilized man's thinking, it is evident that they are for the most part such as are very closely related to practice. Beyond obvious natural kinds, or even usurping their place, we find groupings of things according to their peculiar utility or harmfulness—like our own "food" and "poison." The problems that present themselves to primitive man for solution are attached to matters of immediate practical concern. Theoretical interests are scarcely emancipated. The consequences of this fact are most important. When things and events are grouped according to their relation to human needs, it is only rarely, and, as it were, accidentally that they exhibit any uniformity of relations among themselves. Foods differ endlessly, and so do poisons; and foods and poisons are often closely allied. Why one fruit should nourish us and another make us sick; why a given fish should be unfit to eat at certain seasons and excellent during the remainder of the year—these are not questions that admit of a general solution. Accordingly, for uncivilized man the understanding of nature is limited to generalizations of very narrow scope. Of causal explanation, as we understand it, he possesses very little.

He has, to be sure, causal concepts of his own; but these have special reference to the supposed source of good and evil, success and failure, in the various crises of his life. Nothing is farther from his thoughts than a universal reign of law. It is only certain sorts of things and events that he thinks of as calling for, or admitting of, explanation; namely those that affect, or promise to affect, his welfare. Often enough they are what we should regard as mere co-

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incidences; as when a decayed limb falls just as a child happens to pass under it. Science might undertake to explain the fall of the limb or the movements of the child; but the *accident*—the falling of the limb at just the moment when an injury to the child would result—science would not regard as constituting a real unity in such a way as to admit of a single explanation. But the savage has no such scruples. The child was hurt; and if it was in a particular and unpredictable way, the more need for dealing with the mysterious agency which was responsible.

Foremost among the agencies to which good and evil can plausibly be ascribed, are friendly and unfriendly personalities. Men aid and oppose one another according as love or hate subsists between them—that is matter of the commonest experience. Indeed, when we reflect upon it, it is clear that the only causes that actually make for good or ill, as such, are animate beings. Accordingly, it is not surprising that everywhere among primitive men all the important accidents of life, and above all death itself, are attributed to intentional contrivance. Real men are conceived to have powers that extend far beyond their presence; and imagination fills the world with other agents of a more or less similar character—the spirits with which early religion is principally concerned.

But agencies of an impersonal character are also admitted—forces which attach to men or things and which serve to account for their acting or suffering in remarkable ways. Among these there is one which has survived in the uneducated opinion of our own day, namely *luck*; and we have only to reflect upon this familiar example to come to a more sympathetic appreciation of much that is otherwise baffling in primitive thought. Why does the gambler hold such poor cards this evening? Because his luck is bad. How

shall he change it? That is an important question—if a satisfactory answer can be found. The most elementary principles of science would teach him that no sound answer is possible; but in this matter, at least, he does not think scientifically. He *needs* an answer, and not only he but the whole tribe of card-players; and they get it, not from reason and evidence, but from a tradition that has been shaped by passionate imaginings. He calls for a new deck of cards. He gets up and goes around his chair. He puts his coat on inside out. In a word, he resorts to *magic*.

Another concept which we owe to a very remote pre-scientific thought is that of the *soul*. This has been deeply modified by scientific criticism; but a good deal of the primitive still clings to it. Popularly, the soul is conceived of as a life-giver. While it remains in the body the heart beats, the stomach digests, and the lungs breathe in and out. When it takes its flight, these important processes stop short. As to how the soul produces these effects, no one has the slightest idea—the question is never asked. The savage generally attributes disease to some disturbance of the soul—perhaps an invasion of its domain by a foreign agency of a similar kind; and the cure of disease is therefore magical. The progress of scientific medicine has pretty well abolished this portion of the belief, even in the popular mind; and so far as learned opinion is concerned physiology has taken away almost all of the soul's functions, leaving at most the processes of reproduction and development, together with the psychological processes of thought, feeling and will. Within these limits, however, the nature of the soul's activity is unchanged. It is *functional*: interesting and valuable results are obtained in ways of which no one has any idea.

It would, of course, be gross exaggeration to suppose that in the thought of any people all causality was ever of this

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kind. To make their way in the world men have had to learn to adapt means to ends on the basis of sound, rational observation. When the war-council of a tribe sends out a raiding expedition, it is careful to provide a force sufficient to deal with any probable emergency; and all possible measures are taken to secure the advantages of surprise. But precautions of a very different sort are also taken. For not less important, in the eyes of the chiefs, than numbers, weapons, and superiority of position are certain influences *which directly tend to produce success or failure*. If the members of the raiding party become convinced that these influences are against them, they will quickly beat a retreat no matter how great their superiority in strength. Sometimes the supernatural powers are thought of as personal—as gods or demons—sometimes as impersonal forces; for our present purpose this difference is not important.

(3) INARTICULATENESS

In the third place, the thought of primitive man has much less in the way of logical articulateness than ours. He has no general problems—only answers to what for reflective minds would have been problems; and instead of proof he has a faith which is like direct perception.

The anthropologists of a half-century ago, who discovered animism, regarded it as a kind of primitive philosophy; and in order to trace its probable origin they endeavored to put themselves in the place of the ignorant savage, and to think what evidences, what line of proof, must have led him to embrace so extraordinary a view. We are now well aware that this was a mistake. The savage's belief in his own soul, in those of other men and animals, and even in the souls of countless objects which we recognize as evidently inanimate,

is like believing that grass is green or that snow is white—or that fire escapes upward from a burning log. It is not a theory resting on evidence, but a matter of direct perception, as simple and unreflective as our perception of things ever is.

Primitive man does, of course, reason, and he learns many useful lessons from experience. But even in this he is peculiar. He has apparently no scruples whatsoever in passing from a *post hoc* to a *propter hoc*. We are liable to the same sort of error; but we are to a considerable extent protected by our general principles as to the kinds of things and relations which are worth considering as possible causes. An uneducated American may carry a baked potato in his pocket as a cure for rheumatism. A friend has advised this, and he is willing to try the experiment. An educated man would reject the idea at once; and even the other would hardly consider cutting the potato into a particular shape for the purpose. For primitive man we might almost say that anything can be the cause of anything. It is only necessary that there be something in it to strike the imagination—something unusual or at least not perfectly ordinary—and it then runs a fair chance of being considered the cause of any good or evil fortune that occurs. A European interests some Indian fishermen by making shadow-pictures of a rabbit with his hands. Next day the catch is large. The Indians thereupon beg their visitor to make his rabbit again in order that the good luck may continue. What guidance there is in the search for causes is of the nature of fanciful analogies with other accepted causes. Thus the use of images of game animals in magical practices to ensure a bountiful supply of them is common. The rabbit is not exactly a fish—but what might not come from a shadow-rabbit?

In primitive thought the distinction between the individual

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and the class is less clearly made than is the case with us; and thus, instead of logical subordination, a relation of *participation* is attributed to them.² Any striking resemblance is of the nature of an identity. The totem-animal, for example, is both class and individual at once; and when Brer Rabbit loses his fine bushy tale, all rabbits must forever after go *tailless*.³ More broadly speaking, any associative relation is taken as a dynamic relation. The part and the whole, even when the former has long been separated off; the name and the thing signified; the image and the original; the guest and the host; the weapon and the wound which it has made—these are bound together in such a way that what is done to the one may easily affect the other.

The principle of participation has been used with great suggestiveness in the explanation of all manner of taboos, as well as the practices of contagious and sympathetic magic. When an inconsiderate person boils milk, he boils not merely

² This is a principal topic of Lévy-Bruhl's one-sided but most illuminating discussion of primitive thought: *Les fonctions mentales dans les sociétés inférieures*.

³ It is instructive to note that we ourselves do not always draw the distinction with great clearness. What, for example, is *the* American flag? What do you salute when you salute it? Is it not both identical and not identical with each American flag that we see, even as *the* wolf is present in each wolf that the Indian hunter encounters, and yet lives on when the particular wolf is killed? An example of a different kind has been noted in another connection: luck. There is luck, and there is good luck and bad luck. There is also your luck and mine—yours, say, being good and mine bad. You may lose your good luck, and then your luck will be bad too. You may also contract my bad luck, while *my* luck—note the distinction!—improves. Also, your good luck may not attach directly to you, but to something which you possess, a lucky bat or a lucky penny, for instance; and by parting with this object you may sacrifice the luck also. What is the relation between these lucks? For example, is a change of luck an *alteration* in something which has a certain continuity of existence, or is it a *displacement* of something by something else? When you get my luck, what makes it mine? But such questions ought not to be asked.

the given portion of milk but milk as such; and the drying-effect is felt by the invaluable cows. A knotted cord not only binds in a direct and physical way the object to which it is attached, but, as an obstacle or hindrance, it affects it in all possible uses and functions; for example, a knot in a woman's clothes may make child-birth difficult or impossible for her. Many of our own lingering superstitions are open to a precisely similar mode of explanation. Some men, when walking with a friend, do not like him to pass on the opposite side of an obstacle in the path. The reason is obvious. A division is—a division.

Beliefs which are illogical in their foundation are almost immune to logical criticism. It is almost impossible to reason men out of a superstition. It can not be brought to a test, for every negative result has its explanation ready-made beforehand. The formula which fails to work may not have been followed with sufficient accuracy; the time and attendant circumstances may have been unpropitious; an enemy may have deliberately employed some counter-magic. So also, the spirit from whom good is expected may be unmindful, or may have been offended in some way of which we have no knowledge. The belief remains, therefore, unrefuted, and it is held with undiminished firmness. There are, of course, ways in which such beliefs change. Charms that repeatedly fail to bring success are thought to have lost their strength and fall into disuse; or new charms, of which great results are reported, spring into existence, and the old are, in consequence, neglected and gradually forgotten. In the same way gods lose their worshipers, who are enticed away by the hope of blessings from greater gods; but no god was ever given up because he had been proved not to exist.

(4) LACK OF PLASTICITY

We have noted how the very particularity of the knowledge which primitive man possesses hinders any variation of his technical methods. He uses certain definite materials for certain definite purposes; but he has very little notion of the peculiar physical properties which fit those materials for those purposes. Let him be carried into new surroundings, and he has no means of finding, among the new materials that are available, substitutes for the accustomed materials that are now lacking. Still less has he any idea of the possibility of modifying his procedures to adapt them to different materials. Even with the example of the inhabitants of the locality before him, the stranger is exceedingly reluctant to imitate their ways. Methods which are all very well for them are not for him, and he sticks as long as possible to his own devices.

As ideas gain in logical articulateness, and especially as they are divorced from particular uses and practices, they become more and more susceptible of modification. For just to that extent opinion ceases to be prejudice. Let us once more consider an example taken from our own daily life. What is the difference between a fruit and a vegetable? Vegetables are sober fare, and fruits are dessert. Is a pumpkin a fruit or a vegetable? If in the tradition in which I have been brought up it is a fruit, then for me it is a fruit, and there is not much use in trying to argue me out of it. I may admit that a squash is a vegetable, and I may readily concede the existence of certain similarities between the pumpkin and the squash; but that does not affect my ultimate judgment. You might as well try to prove to me that a tomato was a fruit. But let the notion of a fruit become definable in objective terms—say, in terms of its rela-

tion to the blossom and the seed—and then the question whether a given thing is a fruit or not is capable of being settled by an appeal to fact. Moreover, the knowledge thus gained is often capable of being used, not simply as a guide in the following of a traditional standard, but as a reason for a revision of the standard. If the tomato is *really* a fruit, then its value for dietary purposes may be very different from that which convention assigns it. *The possibility of learning from observation, and even the very motive for the appeal to observation, are thus intimately dependent upon the quality of the ideas.* In so far as man becomes logical, he becomes free.

THOUGHT AND CULTURE

We have repeatedly emphasized the fact, that no one aspect of social evolution is to be regarded as fundamental beyond all others. The interactions are too extensive and too profound for that. But the history of civilization can in no way be more profitably studied than when it is conceived as the history of the enfranchisement of reason—the increasing subordination of tradition to intelligence. It is not only the crafts that are involved. It is morality and law and commerce—and even magic and religion themselves. The progress of morality from the taboo to the golden rule is typical. The particular taboo has no conscious reason for being. It might have been otherwise, and perhaps for many men does not exist at all. But it needs no reason. The prohibition is precise, and the expectation of punishment in case of disobedience is unquestioning. The offended spirits, or the magic lurking in the forbidden thing, may be trusted for that. The morality of a higher culture is, in part at least, rationally organized. It recognizes re-

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lations of means to ends, of purpose to accomplishment, of character to responsibility. It has laws, but these are not blind rules. They are open to modification as the needs of the occasion may demand. "The sabbath is made for man, not man for the sabbath." We shall take up this topic more at length in a later chapter; and in the same connection we shall consider the analogous change that has come upon the political organization of society through the rise of the legislative power. Custom is fact—it needs no justification, and there is no question of altering it. The law is not only a standard of justice, but it is itself expected to be just, and new laws are deliberately made in deference to more or less rationally conceived demands. Exchange, too, has become rational. Among the lower peoples, there is no general conception of a market value to be denoted in terms of a universal measure. Certain things are conventionally exchanged for certain others—as in the case of the bride-price, for example—and certain things may be offered and accepted as compensation for certain injuries. But the equivalences are particular. There is no notion of a scale of values which would make every kind of thing exchangeable for every other. The same process of rationalization is found even in those domains which might be thought to defy reason. Local religious cults are harmonized into a national worship. The same gods are identified under different names, and their doings and attributes are brought together into a system of belief; and out of this process of reflection a monotheism may ultimately emerge. Magic, chief of delusions, develops from a body of set practices into a pseudo-philosophy—an amazingly elaborate endeavor to solve such problems as are connected with the reading of the stars, the

transmutation of the metals, the healing of all disease, and the renewal of youth.

We can not here undertake to trace, even in the barest outlines, the phases of this development. Rather than dissipate our energies, we will do well to limit ourselves to a single aspect of the matter, *the influence of the rise of science upon technology*. And here, out of a multitude of questions that might well be raised, we shall consider but one: why Greek science had, even relatively to its extent, so much less influence than modern science. This will take us at once to the heart of the subject.

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CHAPTER XI

THE DEVELOPMENT OF THOUGHT, II

THE whole history of Greek science falls within a period of retarded or arrested technological development. Before Thales startled his eager little world with the conception of a permanent material substratum underlying all changes in the appearance of things, or moved them to admiration of his ingenuity by measuring the distance of an inaccessible object, industrial technique had already reached a remarkable degree of perfection. It was not till long after Greek science had gone into a decline and in western Europe had been pretty thoroughly forgotten, that any further technical progress of great importance ensued. The architecture and ship-building of the later middle ages, as well as the armorer's craft, show an immense advance; but science contributed nothing to it. And science had nothing to do with the invention of gun-powder, of the printing-press, or of the mariner's compass. In the course of the seventeenth and eighteenth centuries the relation between science and industry was profoundly changed; and in the nineteenth century the useful inventions to which science gave birth may fairly be set over against the whole previous progress of human skill from the time of the first chipped flints.

There is a generally accepted explanation of the practical futility of Greek science—an explanation which refers it to the institution of slavery as it existed in the Hellenistic period. On the one hand, the cheapness of manual labor

left little room for mechanical invention and even retarded the popularization of labor-saving devices—notably the water-driven flour mill—which were introduced from the East. On the other hand, the association of the processes of manufacture with the despised slaves intensified the Greek gentleman's contempt for industry; and the men of science were for the most part gentlemen. There can be little doubt that this explanation contains a part of the truth. Let us inquire, however, whether in the character of Greek science itself a further explanation is not to be found.

RELATION OF GREEK THOUGHT TO PRACTICE: PLATONISM

In an earlier chapter the rise of science was cited as a typical example of social evolution. We must now return to the subject and examine it from a somewhat different angle. The reader will no doubt pardon a certain amount of unavoidable repetition.

Was Greek science too disinterested? We should rather say that no characteristic of science, whether Greek or modern, is more profoundly important than its disinterestedness. Science may be pursued for an infinite diversity of ulterior purposes, and it actually serves an infinite variety of ends; but just in proportion as it advances it develops a life of its own, with values internal to itself and independent of the uses that lie beyond. This was first made plain in the logical organization of elementary geometry, which was effected by the school of Plato. It is the chief glory of those old mathematicians that they demonstrated familiar and obvious truths with the same scrupulous care as the most unexpected and paradoxical discoveries. The "practical" Roman encyclopedist could think that he was preserving

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what was essential in Euclid, when he copied out a list of important theorems to be learned by heart—without the proofs. In the eyes of the true man of science the proofs were what gave to geometry its peculiar and incomparable excellence.

There is no doubt that in the Greek geometers this feeling was exaggerated to the point of intolerance for the more commonplace utilitarian attitude. An old anecdote has it—and “the truest histories are not always those that have happened”—that Ptolemy, when he was asked by a pupil what geometry was good for, called to a slave to give the boy a penny, exclaiming: “He wishes to be paid for learning.” But the question was a fair one and deserved a fair answer. Nevertheless the intolerance of the geometrician was not without a certain justification. It has been said of moral virtue, that just because it is a universal means it is the supreme end, gathering up in itself the goodness of all other things. Something of the sort may be urged for science. It is not, indeed, a universal means. There are human ends which hitherto, and perhaps forever, lie beyond the range of its applications. But it serves, nevertheless, with entire indifference an infinite variety of ends, and thus possesses a certain absoluteness of value. Its truths aim, at least, at being valid unconditionally, and hence for all possible purposes; and though this is an ideal which is perhaps never quite reached and in large domains of investigation is yet far distant, yet there are fields in which from a very early date something closely approaching the ideal limit has been attained. Indeed, so far as pure mathematics is concerned, most men would agree that the limit itself was reached. The simple formulae of the fundamental arithmetical operations hold true whether it is men that are counted, or sheep, or the stars of heaven.

And the three-four-five triangle retains its square corner, whether an altar or a palace is to be erected or the boundary of a field is to be marked out. Useful as mathematical principles are, they are indifferent to every use.

A more serious shortcoming of Greek science lies in the fact, that, except in the field of mathematics, it was never more than half-free. The Greek philosophers, with few exceptions, had, like the poets of the historic period, a strong ethical bias. There is a popular delusion current among us with regard to this point, a delusion which has often been exposed, but which appears to be unaffected by exposure. The Greek poets from Hesiod down are thought to have shared our peculiarly modern sentiment of "art for art's sake"; whereas they were consciously and professedly the moral teachers of the people; and while Homer is, of course, an exception, Greek criticism did not recognize this, and regarded his work as being as didactic in spirit as the rest. Similarly, the philosophers are conceived to have looked upon the world with the detachment and unclouded vision of polite theater-goers. Now it is true that they themselves were not averse to such a comparison; but, as a class, they are far from having deserved it. It is true, too, that Plato and Aristotle—to mention no others—regarded the contemplation of eternal truths as the supreme function of man, shared by him with the divine nature; and that they ranked theoretical wisdom as the supreme excellence, altogether higher than the moral virtues. Nevertheless in their own thought considerations of utility are an ever-disturbing factor.

Let us consider the case of Plato, who, as a distinguished mathematician as well as the greatest of the ancient philosophers, represents Greek genius at its height. He was a great religious leader also, and an impressive narrator of

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ancient and edifying myths. How does he reconcile the two sides of his intellectual life? He tries to do so by clearly distinguishing between them. According to him, knowledge in the strict sense of the term—*i. e.*, science—and belief are two radically distinct activities with characteristically different objects. The former is of the timeless, or eternal; the latter, of the temporal. Knowledge includes the mathematical sciences, together with a projected science of “dialectic,” in which even the logical rigor of mathematics was to be exceeded. Belief has for its domain the whole of nature, the world as we find it in this life or in any life to come. Knowledge is a function of reason, in which passion has no share. Belief is in part the work of passion, and it is ever liable to be disturbed by passion. Truth is not to be expected of it, only a somewhat vague probability or plausibility. Experience does not furnish us with proofs to support our knowledge. Experience illustrates principles and suggests possible applications of them; that is all. “Empirical knowledge” is thus, strictly speaking, a contradiction in terms; for just in so far as knowledge is empirical it is mixed with mere belief. Physics and biology are, for Plato, as closely allied to religion as to science; and his systematic exposition of his own views about nature (in the *Timaeus*) is in the form of a myth.

With respect to beliefs, while strict proof is out of the question, a moral justification is in order. Just because Plato clings so strongly to the mathematical ideal of knowledge, his conception of the possible extent of knowledge is narrowed—narrowed so that many questions of the utmost importance for humanity are left outside. How men answer these questions is strongly determinative of their character and their way of life. Even scientific inquiry

itself, as a human occupation, is deeply affected. Plato lays down the maxim, that where proof is impossible we have a right to put our faith in beliefs which, experience has shown, will encourage us in right-doing. In the *Phaedo* this justification is given for the belief in future rewards and punishments; in the *Meno* it is given for the belief in the possibility of scientific progress.

In the detail of natural science, the essential questions are, for Plato, all *teleological*: they have to do with the purposes which things serve. The only satisfactory explanation of natural phenomena, he holds, consists in pointing out how the given arrangements make for the best. He does not, of course, condemn mechanical explanation altogether. (He has theories of that kind himself, though fanciful and never of any serious value.) But he regards it as being distinctly superficial. It is, he says, like explaining the behavior of an intelligent man in terms of the anatomical arrangement of his muscles, bones, and tendons.

Thus even when the questions which Plato discusses are far removed from considerations of immediate utility, his thought—mathematics apart—operates by means of conceptions which bear the impress of his desires and aspirations. His is not a philosophy “as you would”; but the wish is still for him father to the thought.

LIMITATIONS OF GREEK SCIENCE

When we look back at the beginnings of Greek physical science and trace the course of its development, we find that Plato fairly represents the movement as a whole. The cosmology that grew up in Ionia during the sixth century was inspired by a warm and disinterested love of knowledge—of that there can be no doubt; but disturbing factors

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were not absent. The old magic and religion lived on in the very fiber of the new thought; and even those who, like Heraclitus, expressly repudiated the popular tradition in the most violent terms, were far from being free from its influence.

The greatest contribution of the period is, of course, the principle of the conservation of matter; and no one would wish to question the genuineness of the scientific spirit that conceived it. But this matter, which amid the infinite variety of natural changes remained fixed in amount, was no mere physical substance. It was alive, and the changes which it underwent sprang from its inexhaustible life. And it was conscious; it was divine. The cosmologists differed among themselves as to which was the fundamental form of matter, from which the other forms were derived; but, whether this was identified with water, air, or fire, or with some neutral and imperceptible stuff, it was a supreme God. So also was the Being of the Eleatic philosophers; the four elements (earth, air, fire, and water) of Empedocles are expressly referred to by him as the "gods"; and Anaxagoras, while he admits that the great bulk of matter is passive and inert, concentrates all life and thought in a single substance which he calls "mind," and which acts as a divinity. The atomists of Abdera are the only important exception to the rule; and they failed utterly to win the scientific world to their views. Democritus, in an oft-quoted fragment, remarks that he came to Athens and found himself unknown. And in a later age the atomistic hypothesis was embraced, not by men of scientific temper and training, but by Epicurean moralists; and it was valued, not for the degree of satisfaction which it gave to a purely intellectual curiosity, but as an escape from the terrors of religious superstition. Both in the Platonic and in the Aristotelian tradition, as well as in the less significant Stoic teaching,

all phenomena are essentially organic; the real explanation of natural events is found in the part they play in a vast vital economy.

Perhaps the most important pre-scientific inheritance of the Greek thinkers was the *soul*, which, to be sure, they generally identified, as the principle of life, with the divine world-stuff. Thus Anaximenes, whose divinity is the air—which he supposes to extend without limit in all directions—identifies man's soul with his breath; and he thinks that the "heavens" (*i. e.*, the portion of the universe bounded by the round, starry sky) is alive like us, and that like us it breathes the air in and out. This is the fascinating but pernicious *analogy of the macrocosm and the microcosm* which Greek thought never outlived and which persists down to our own day in much pseudo-scientific speculation. Heraclitus similarly sees in man's soul a spark of the divine fire and Anaxagoras regards it as a portion of the cosmic "mind," and attributes to it the order and system of the body. The atomists do not reject the conception, but they try—very ineffectually, we must admit—to rid it of its supernatural character: the soul for them consists of the tiniest and most mobile atoms. Plato goes in the opposite direction, exaggerating to the utmost the soul's magical characteristics, but at the same time gaining a certain measure of logical consistency. The soul is for him an immaterial thing; simple and hence not liable to disintegration; an original source of movement; temporarily united to the body in a totally inexplicable way; owing its sensations and passions to the influence of the body but reacting upon it far more powerfully, giving it life and shaping and directing it in accordance with its own nature. Aristotle endeavors, not without success, to escape from Plato's dualism—to bring the soul back into nature and to

assimilate its action to the universal course of things; but the result is rather to assimilate all natural processes to the functional causality of the soul itself.

We need not be surprised that the Greeks never succeeded in developing a scientific dynamics. The atomists were alone in making even a fair beginning in that direction. They alone had a realization of the fundamentally mathematical character of physical problems. To them we owe the saying, "Nothing comes about by chance, but all things come about by a cause and by necessity"—which to Plato and Aristotle was mere confusion of thought. They introduced in its first crude form the notion of *mass* in order to explain the fact that different bodies acted upon by equal forces acquire different velocities; and they used the weight of bodies as a measure of their mass. They added to the old principle of the conservation of matter the new principle that motion is never created or destroyed. They added too a further doctrine, which, whatever may prove to be its ultimate tenability, has been one of the most helpful of intellectual guides; namely, that there is no action at a distance, but that all communication of motion is through impact.

This was a beginning, but it went no farther; and according to the ways of thinking which generally prevailed even this was nonsense. Greek science was dominated by Platonism, and for Platonism nothing is commoner than the fresh initiation of motions. It is what the soul of each one of us is continually doing, and what the soul of the world is likewise doing. If matter were left to itself it would exhibit none of the beautiful and regular movements which make up the cosmic order. It would be dead—either motionless or moving only in haphazard ways as chance directs. Motion, once started, does not persist end-

lessly, but is gradually used up and comes finally to a stop. Hence there must be a continual renewal of motion, or the whole world would run down; and the source of the added motion must be extra-physical, and indeed supernatural. The Platonic proof of the existence of a god, or gods, rests directly upon this consideration.

It is amazing that in spite of the burden of misconception which rested upon them, the Greeks accomplished so much. In the field of astronomy, for example, they discovered the source of the moon's light and the cause of its phases, as well as the causes of eclipses both of the sun and of the moon. They discovered the spherical form of the earth and measured its size with a fair degree of approximation. They measured the distance of the moon and—much less accurately—of the sun, and made rough calculations of the size of both. In the person of Aristarchus they even attained the conclusion that the whole system of planets, including the earth itself, revolves about the sun, though this never received general recognition.

But the glory of these achievements and of others no less remarkable should not blind us to the fact that the Greeks never worked out a clear conception of any physical process. So far were they from the notion of energy, that they did not even master the conception of force except in its relation to equilibrium. They never had the least suspicion of the simple quantitative relation between the time of action of a force and the resultant velocity. What wonder that the influence of such science upon technology was slight?

Greek astronomy illustrates in a singular way the fundamental lack in Greek mechanics. Balance was well understood. An Archimedes could expound with geometric elaborateness and precision the theory of the lever or the

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theory of floating bodies. But in the heavens there are incessant and regular (or nearly regular) motions. How was science to treat of these? Like a dance of ghosts. There was no thought of the masses that might be involved. An ingeniously complicated system of spatio-temporal diagrams had to be analyzed and reduced, so far as possible, to rule. Even when it was well known that the sun must be at least many thousands of times as large as the earth, no suspicion of a difficulty was felt in supposing that the earth was the center about which the great body revolved—no wonder at the thought that so small a dog should wag so huge a tail. Only the vaguest notion was entertained of the forces represented by the planetary movements. In the Renaissance, on the contrary, the problem of astronomical forces came to the foreground of scientific attention. For two generations before Newton's brilliant and comprehensive solution was published, the mathematicians of Europe had labored upon it. They longed to understand. For the Greeks there was no such problem. The whole subject lay outside the domain of science. The only relevant conceptions were essentially superstitious.

With all its shortcomings and failures, Greek science was still science—a deliberate attempt to find universal laws of nature, valid everlastingly and for all men. And from one weakness of early modern thought the Greeks were relatively free. Medieval Christianity inculcated a view of the world, in which man was central and all-important. For man the earth and sun and stars were made, and all the lower creatures that live upon the earth were intended for his uses. The history of the world was the history of his creation, fall, and redemption. He was a supernatural being, and through him and for him miracles were daily performed. But the Greek pagan superstition took a differ-

ent course. The sun and moon and the earth itself were blessed deities; and among the denizens of earth there were superhuman beings in plenty. Thus the Greek thinker, while he might regard himself as a fair sample and image of the world, was in little danger of fancying himself to be its center. Hence he easily adopted a certain objectivity in his researches and speculations about man, which modern science won only through an intellectual revolution.

THE LIBERATION OF THOUGHT

Greek thought is sometimes contrasted with modern, as if the former were essentially a conceptual analysis of the phenomena, and the latter an empirical analysis. The contrast is most superficial. Greek thought is in no way more profoundly distinguished from our own than by the inadequacy of its conceptual equipment. Of this we have already had some illustration from the realm of physics; but it is also evident in the field of mathematics. Among the Greeks there were as goodly a proportion of keen and patient observers as among us. But they lacked all conception of number, except as it is directly connected with counting; that is to say, they were limited to the positive integers beginning with one. They had no zero; they had no negative numbers; they had no notion of fractional numbers, much less of irrational numbers. They lacked the conception of a numerical notation based on position; of the roots of an equation; of most of the trigonometric functions; of the graphic representation of equations; of differentiation and integration. But this mathematical equipment was precisely what was fundamentally necessary in order that physical science should make its prodigious

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advance. Successful experimentation requires more than observant eyes. Each test owes its significance to its relations within a conceptual system; and in the physical sciences the articulation of the system is in the main mathematical. If Galileo had not been familiar with equations of the second degree, he would have learned little from his rolling of balls down inclined planes.

It would be fairer to say that Greek science was distinguished from ours by its lack of instruments. The relation of scientific instruments to intellectual progress is very similar to that of tools to industry; but we shall not pause here to pursue the parallel. The Greeks had the compasses and the straight-edge, the linear scale and various forms of protractors; they had balances; and they had several instruments for the rough measurement of time. But they lacked the telescope and the microscope; and they lacked the clock. Thus they had to depend in their observations upon the almost unassisted acuity of the human senses; and exact measurement, especially of time, was impossible to them. But the relations which the laws of nature express contain almost always a temporal factor; and a high degree of accuracy in measurement is generally necessary to exhibit them.

Spinoza has well remarked that the liberation of the human spirit from the bonds of superstition would have been impossible if geometry had not given men the example of a body of universal truths to which human hopes and fears were utterly irrelevant. But geometry could accomplish only a partial liberation. It was left to dynamics, and above all to the theory of gravitation, to carry on the work. For here the vague conception of causality—which might cover anything from witchcraft to divine interposition—was replaced by that of *functional relation*; and in

the realm of inorganic nature it became preposterous to suppose that scientific explanation could contain any reference to magical or religious agencies. The great liberators were Galileo, through whose labors dynamics became a science, and Newton, who provided it with a more adequate mathematical basis and extended the application of its laws to the whole visible universe.

Religious superstition was now powerless to resist the progress of science. It is not that belief in God was generally given up. More often it became *deistic*; that is to say, while a creator of the world was recognized, it was held that his omnipotence and providence had been exercised once for all in the act of creation, and that now all things proceeded according to universal laws. For scientific purposes, God could be left out of the account. The soul, too, was ejected from nature. Galileo's successful mathematical treatment of moving bodies produced an intense conviction, that motion, like matter, is uncreatable and indestructible; and the bolder spirits had no hesitation in applying this principle to the functions of the living organism. At this juncture came Harvey's discovery of the circulation of the blood; and though the explanation of the action of the heart itself was still a mystery, the mechanistic theory of life received a great impetus. The typical modern attitude is seen in Descartes. He retains his belief in the human soul; but he limits its functions to thinking, feeling and willing—it has nothing to do with the operations of the bodily organism. Thus the independence of the physical sciences was extended to physiology—at the sacrifice of the sciences of mind and society. However, even with this sacrifice certain difficulties persisted. The excitation of sensations and emotions in man, on the one hand, and the voluntary movements, as well as the involuntary expres-

sion of the emotions, on the other hand, constituted a connection between the realms of mind and physical nature, which remained a "final inexplicability." Except for this one bond, natural science was free. To throw it off also became one of the great desiderata.

Closely connected with the banishment of God and the soul from the realm of science, was the definitive establishment (by Galileo) of the distinction between primary and secondary qualities. Secondary qualities are the appearances of things to an observer, and hence they are relative to the nature of the observer; and they can not enter into any explanatory account of the way things act on one another. They are indispensable in scientific descriptions, but they can not enter into the statement of the fundamental laws of nature—no more in physics than in geometry. In the Aristotelian system, hot and cold, conceived as qualitative opposites, were regarded as essential characteristics of substances, and valid physical explanations might be given in terms of them. In the new system this could not be. Explanation must be in terms of that which could be *measured*. For by measurement the observer is, as far as possible, eliminated from the problem. If *A* is heavier than *B*, it is so for every observer and by every test—aside, of course, from a certain chance of error. It is through measurement that science obtains the objectivity which it demands. This is the principal use of scientific instruments: not to reveal distant or minute objects that would otherwise be imperceptible, but to establish the existence of quantitative differences that must otherwise remain uncertain.

The elimination of secondary qualities was essential to the growth of physics. It was no less essential to the birth of chemistry. The ancients, it should be remembered, never attained the conception of chemical union. They learned to

attribute much to mixture; but the elements of the mixture retained in it the qualities—including the sense-qualities—which belonged to them in separation. There were at best only fanciful anticipations of the law of definite proportions. The chemical procedures of industry—notably the smelting of metals—were interpreted by essentially magical analogies; and even when methodical experimentation was attempted it was magical analogies that furnished the guiding thread. That alchemy might become chemistry a new skepticism was necessary—not a mere denial of the trustworthiness of the senses or of the authority of learned or sacred tradition, but a positive demand for the objective evidence afforded by measurement.

A climax in the development of science, and one of the greatest importance to industry, was the quantitative correlation of the various forms of energy. Without this correlation, indeed, a clear conception of energy itself was not possible. Late in the seventeenth century the correlation was accomplished for kinetic energy, or *vis viva* as it was called, and the potential energy of height above the earth's surface. In the nineteenth century this result was successfully generalized. The conservation of energy has become the most widely illuminating of scientific generalizations. Through its influence the various departments of physics have been unified and the distinction between physics and chemistry has become tenuous. Even physiology has been drawn into the system. At the same time a new economy has dawned upon the world—an economy, not simply of goods or of human care and effort, but of mechanical work and of all that can be converted into it.

Such are in outline the great differences in the internal constitution of Greek and modern science, which may serve

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to explain their very disproportionate practical influence, especially in the field of industry. Modern science is better science: more clearly articulated, freer from disturbing sentimental influences, more objective; and its superiority is especially manifest in the treatment of processes. Our admiration for Greek genius and our sense of the indebtedness of the modern world to the great pioneers of reflective and critical thought should not blind us to this plain fact. The science of today, throughout the greater part of its domain, stands to that of the Greeks as the latter stands to primitive folk-lore.

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CHAPTER XII

COÖPERATION AND THE DIVISION OF LABOR

IN Chapter I attention was called to two aspects of social intercourse which by different theorists have been regarded as especially fundamental or significant: coöperation and communication. As we then pointed out, these are certainly very intimately interconnected; and in view of the teachings of an influential school of psychologists (the *behaviorists*) an even deeper unity may be surmised. However, an improved understanding of things has often been found to depend upon the provisional isolation of aspects of reality, which had later to be reunited. The maxim of Descartes, as of Caesar, is: "Divide, and conquer." And it may well be that this double consideration of social intercourse, regarding it as the interchange of goods and services, on the one hand, and of ideas and feelings, on the other, can be made exceedingly useful in the study of social evolution. Society has evolved in all respects, and all must be considered if the account of the evolution is to be reasonably complete. We are led to a one-sided, if not a false, view of social evolution, if we say (for example) that it is reducible to the progressive division of labor. Perhaps it is, if all that is directly or indirectly involved in the division of labor is included. But the human mind is not adapted to see all the parts of a complex whole with equal clearness in a single perspective. And if social evolution is the division of labor, it is equally true that it is the development of standards of value. The

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difficulties of investigation would be much less if only ignorance and error were to be contended against. One truth shuts out another; and it is only by a forcible shift of the center of vision that the obscured relations are brought into view.

There is a further distinction, which, with very little arbitrariness, we can carry through, and which may prove highly useful: namely, the distinction between the *mode* of social intercourse and its *content*; that is to say, between the means of conveyance, physical or psychological, and that which is conveyed. Thus, to consider an example of the communication of ideas, information may be given by one body of Indians to another, by means of picture-writing traced upon birch-bark, and carried by a messenger over a well-worn trail; and the content of the message may be a narrative of the movements of a common enemy. Or, again, information may be printed in a journal and carried by mail-trains and steamers in a hundred different directions and to distances rising to half the earth's circumference; and the content may be that an attempted verification of a certain theory of ether-structure has failed. Between these two examples there lies the invention of alphabetic writing, as well as of paper and ink and the printing-press; there lies the rise of wholly new methods of transportation and the utilization of these in an organized national and international postal system. And there also lies the difference between simple narrative and experimental science.

Now it can, I believe, be asserted as a principle of universal application, that *every improvement in the mode of intercourse*—everything that facilitates it or extends its range—is a *factor in the development of the content*. Thus the development of industrial processes and of the wealth which passes through the markets of the world is directly

dependent upon the organization of labor, the means of travel and transportation, and the forms by which a transfer of ownership may be effected. The advancement of knowledge and the progress of art and religion, morals and politics, are dependent on the means of expressing ideas, as well as on those relations between men which render them capable of sympathetic feeling and, more particularly, susceptible to the influence of one another's approval and disapproval. Furthermore, when the various forms of co-operation are compared, and the variable factors which enter into them or determine their modification are considered, among the most influential are found to be the means of communication and the social relations just referred to. If any factor is of comparable importance, it is transportation. In a general way, therefore, and without wishing to depreciate reciprocal influences, we may say that *facility of communication* is a primary factor, if not the fundamental factor, in social evolution. This is an inference which the behaviorist psychology would lead us to anticipate; and if it can be made at least plausible on independent grounds, it furnishes a not unimportant confirmation of that way of thinking.

The justification of this inference is the task of this and the two following chapters. In the present chapter we shall consider more particularly the economic aspects of the matter. In Chapters XIII and XIV we shall study in a broader way the evolutionary significance (1) of the means of communication and (2) of the forms of social organization. But the three chapters are to be regarded as having a certain unity of design.

We proceed, then, to pass in review some of the more important aspects of the development of the forms and instrumentalities of coöperation, direct and indirect, with a

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view to the two-fold inquiry: first, what relation has this development to the general development of industry; and, secondly, upon what more fundamental factors does it in turn depend?

MODES OF COÖPERATION

There are, broadly speaking, three modes in which services are rendered: spontaneously,¹ by compulsion, and by agreement. It is doubtful whether any temporal sequence can be made out between them, except that while all three are as old as humanity as we know it, the first alone goes back to prehuman conditions, and the second, while extending more and more widely in the earlier stages of social evolution, has in the later stages tended to give way to the third.

The interchange of services is doubtless in its origin entirely informal, and it still remains so to a very considerable extent; that is to say, there is no measuring of equivalents and no special power or procedure to ensure the return of benefits. The so-called punishments inflicted among primitive peoples have no such function, their object being to remove religious or magical pollution. Man is a kindly animal, when his fears are not aroused; and mutual aid is more freely given than philosophers have sometimes been willing to admit. Such aid may be merely occasional, dependent upon accidental and passing needs; but it may also enter into the essential structure of the community. The

¹ The term is not altogether satisfactory, but there appears to be nothing better. As it is here used, its force is essentially negative: involving neither compulsion nor agreement. "Conventional" would cover a great part of the ground, but by no means the whole. Relations of personal friendship, for example, lead to mutual services which can hardly be brought under that rubric, though in the character of the friendship itself the conventional element is commonly very strong.

interests of the primitive hunting-group and family-group call for a collaboration which is rendered without much question. Scorn and anger, individual and collective, are quite as characteristic of the savage as of ourselves; and the expression of these emotions constitutes an irregular but highly efficient sanction—in so far as a sanction is needed—for the performance of the common duties of life.

For a considerable part of the organized activity of savages, namely the performance of the religious rites of the clan or tribe, there are, of course, sanctions of a very special kind. Concern in the success of the rites is so universal and so intense that the question of non-participation simply does not arise—and would not, even if the ceremonies were not in themselves a matter of absorbing interest.

It need scarcely be remarked, though the fact has a certain theoretical significance, that at all stages of human progress a naïve good-will remains essential to a high degree of efficiency. When the subject does only what he is commanded to do, or the workman only what he has agreed to do, the social commonwealth is sadly in need of reformation.

With the rise of war and of regular work—agriculture and the care of flocks and herds—a different sort of organization of labor becomes increasingly important.² This is based upon personal *authority*, and is enforced by *punishment*. The authority may be temporary or permanent; it may be restricted to a narrow range of commands and prohibitions, or it may—as in the relation of master and slave—embrace the whole life of the subordinate; but normally

² I do not mean that these are necessarily conscious motives which determine the rise of authority. Sometimes that is what they are, especially in relatively advanced communities. But early authority has generally a religious character. Except in relation to slaves who are not regarded as real members of the community, authority is a *sacred* right.

it is a customary right, to which an obligation of obedience corresponds. There is, indeed, the limiting case in which the prisoner of war or the convicted criminal is denied all consideration, and by threats and blows is compelled to do certain work until death liberates him. But it is fair to say that slavery of this sort, extensive as it has been, occupies a comparatively small place in the industrial history of the world.

If it be asked, in what way the system of authority is superior to the primitive condition which it so largely replaces, the answer is not difficult to perceive. In war the authority of the chief secures a unity of action, which spontaneous efforts, however well-intentioned, must inevitably lack. A similar degree of unity of effort is not called for in peaceful work, unless it is on a considerable scale, in the execution of a large design. In the construction of great buildings, as well as of the canals so important to the agricultural prosperity of certain countries, coöperation must be almost, if not quite, as harmonious as in war. And, indeed, among the most important duties of the Mesopotamian sovereign were the building of temples and the digging of canals. In varying degrees, however, unity of action is necessary in agricultural and pastoral pursuits; and the authority of husband, parent, and owner has had a wide field of useful exercise.

We may pass over the obviously great importance of personal authority in the maintenance of the good order which is essential to all continuous industry, since we have here to do with authority only in relation to the coöperation which it directly effects. It may be well, however, to emphasize another function which authority performs, though this too is not strictly relevant. This is its educational function. The pursuits of the primitive hunter lie close to the inher-

ited instincts of the race. He needs no training for them, except such as the play of childhood and the more serious experience of youth are sufficient to give him. But the tilling of the soil and the regular care of domestic animals are in a different category. The natural man abominates them, and he must be well disciplined in childhood if he is to learn to tolerate them, much less regard them as part of the content of a happy life. For the securing of this discipline, authority appears to be necessary. One must learn to work through obedience.

Finally, as we have said, the exchange of services may be based upon *agreement*. As a general rule, mutual services, except in the case of mutual aid in a common enterprise, can not be simultaneously performed. Accordingly, unless there be a payment in goods or money—and often even then—one party to an agreement must act before the other, and wait for his recompense. Here again, in vast numbers of instances, there is no formal sanction of any kind. In making agreements men generally expect to abide by them; and, if they break them, contempt and dislike, joined to the inevitable difficulty of making new agreements, are all that they have to suffer. But even among savages of low degree there may be more than this. *Magical or religious sanctions* may operate. The word of promise itself in the form of an oath may suffice to bind the speaker, under pain of consequences too awful to contemplate; or supplementary rites may be added. *Pledges* may be given, ranging from the person of the debtor himself, or that of his child or slave, to any article of a value proportionate to the pettiest case. The pledge may be added to the oath or may take its place. And last the *legally enforceable contract* appears, sometimes accompanied by magical sanctions or by the giving of a pledge, but increasingly independent of

these; and this mode of agreement rapidly extends over the most important part of the field.

The reign of law is in the minds of many men a synonym for civilization. Certainly the legal contract has immense advantages over its forerunners. Magical sanctions are excellent in their way, but they have several more or less serious defects. The slightest and seemingly most insignificant error in the procedure robs them of all power; and it is hard to be assured that no error has been committed. There is also the possibility of counter-magic. Unscrupulous men are sometimes possessed of charms which enable them to take and break all ordinary oaths with impunity; and such men will lend their power for a price to other men who wish to defraud. Finally, for no particular assignable reason, the efficiency of magic sometimes wears out. The solid security of the pledge is therefore somewhat preferable. But if the pledge protects the party who receives it, it leaves unprotected the party who gives it. When the latter has fulfilled his part of the agreement he may be helpless to compel the return of his property. The law protects both parties alike.

Certain of the advantages which are secured to society by the maintenance of personal authority have been mentioned above. But personal authority too has its limitations, and these are precisely what the free and enforceable contract is fitted to remedy. The intelligence of the person in authority is limited both in its range and in its grasp of detail. In the military organization this defect is largely overcome by a quasi-feudal delegation of authority in successive steps. But a city has activities which are almost infinitely more varied than those of an army, and no such system can be made adequate to its needs. Again, even in the army, a certain scope must be left to free initia-

tive; and at the same time the sense of subjection to a superior authority is almost inevitably deadening to initiative: it is safer simply to obey. In civil life, where an inspection from above is so largely impossible, individual initiative is even more essential. Within the limits of the family group the primitive mutual good-will of its members may supply what the authority of the head cannot secure. But beyond such limits a more formal mode of coöperation is necessary. Where a general community of interest is not felt, a *community of interest for the given occasion* must be created, so that each party in acting for himself shall be acting for the other; and it is this that the specific agreement, and above all the legal contract, accomplishes.

The reader cannot fail to observe that it is not simply three modes of coöperation that we have been considering; it is three types of social organization.³ There is the organization based upon (real or fancied) kinship; there is the organization based upon arbitrary power; and there is the organization based upon civil liberty,—the liberty which consists in subjection to law. Needless to say, these types of organization are not mutually exclusive. They mix together in all manner of proportions, and they pass into one another imperceptibly.

The importance of fulfilling agreements, even under conditions where they are not legally enforceable, has become widely realized, though not uniformly in all classes of society. The sentiment is partly one of enlightened egoism, partly a sense of honor or of morality. Agreements between states stand upon a very similar footing. These are originally confirmed by religious or magical sanctions, reinforced by a giving or an exchange of pledges, *i. e.*, hostages. In ancient times the religious conception of treaties

³ Cf. L. T. Hobhouse, *Morals in Evolution*, third edition, pp. 43 ff.

was never clearly transcended. In modern times, however, the treaty has come to be regarded as an entirely human affair. Sometimes it is viewed as merely a mutual assurance of a recognized community of interests. When to either party it seems that the community has ceased, the treaty is on this view no longer binding; though for ulterior reasons the party in question may still pretend to consider its interests to be what they were, just as it may only pretend to recognize a community of interests in the first place. Sometimes the treaty is regarded as a genuine agreement, which remains binding even though circumstances may have changed, because to be faithless to the engagement would create resentment and make it difficult for the offending state to enter into other treaties. Sometimes the further consideration enters in, that for one state to break faith would tend to destroy international confidence generally. This last motive, since it refers to an object of universal concern, is capable of functioning as a moral motive in the strictest sense of the term.

An important feature of the labor-agreement consists in the restrictions, which, especially in recent times, have been imposed upon it. In general, these have grown up outside the field of law, and the law has only gradually and imperfectly taken cognizance of them. Indeed, it is still doubtful how far legal interference is desirable. The minimum wage, accident insurance, and the limitation of the hours of labor—either universally or in certain industries or for certain classes of persons (women and children)—are examples of the kind of provision which the law may properly secure. But even these have their origin in extra-legal agreements, and most of the agreements still remain upon that basis.

The prior agreements, upon which the restrictions commonly depend, are of two kinds: first, agreements between

workmen, joined in permanent organizations for the purpose, not to accept employment except on certain specified conditions; and, secondly, agreements between employers not to hire workmen except upon certain conditions. Because of the existence, or the menace, of such restrictions, several further kinds of agreements have sprung up, which are intended to overcome the obstacles to steady employment, which the restrictive agreements set up. Of those the most important are of the nature of treaties, either between the labor-organization and the particular employer or between organizations of workmen and employers. In almost no instance is any such pact enforceable at law. The legal contract is between employer and employee. But agreements between labor and capital, though sometimes broken, are far more often kept, and a powerful sentiment has now arisen in their support. Violent means are far more often consequent upon failure to reach an agreement than upon a breach of one. The analogy to the binding-force of treaties between independent states is more than superficial.

PROPERTY

The exchange of goods commonly involves two factors: the transportation of the goods and the transfer of ownership. The latter is alone strictly essential, but the former is generally necessary in order to make the moral transfer effective.

The evolution of commerce has depended directly upon the evolution of property rights. Such rights, individual and collective, are as old as humanity; or rather, in their instinctive form, they are far older than humanity. The exclusive possession of implements or ornaments which one

is accustomed to use is found among the lowest savages. The hunting-ground and the paraphernalia of religious ritual are commonly tribal or clan possessions; but they may also belong to families or even to particular individuals. The right to property generally includes the right to abandon or destroy it, and also the right to cede it; although in some cases, especially of public property, abandonment or cession may be inconceivable. Gift, loan, and barter are universally familiar; and hunting peoples are quite capable of bartering away a portion of their territory.

Property among primitive peoples is always to some extent based upon magical practices. Of these cord-magic may be taken as a typical example. The cord, fastened about a tree, makes the tree and its fruit taboo to all except the one who put it there; just as put about the waist of a woman it makes her a wife, taboo to all men save one. In a somewhat analogous fashion a heap of valued possessions, exposed upon the open beach, may be safeguarded by placing a large stone upon them. As the belief in magic declines, and its functions are assumed by other agencies, practices like these long survive as symbols to which a more or less powerful sentiment attaches. To primitive man, however, they are not symbols, but are intensely real and efficacious in themselves.

Property-rights may also be organized on the basis of authority. The minor or the slave, for example, has his *peculium*, which the head of the household permits him to hold and protects him in holding. The feudal system, whether in ancient Babylonia or in medieval France or Germany, is a development of this principle. The fountain of authority is commonly conceived to be a god, to whom the king renders the service of maintaining the cult. Each new successor to the throne must be initiated into his

rights by certain traditional ceremonies. The barons of various degrees derive their holdings, by successive delegations of authority, from the king; and a return is made in the form of service—especially in war—and in the form of supplies.

Property may also be held by a legally valid *title*, which is subject only to the “*eminent domain*” of the state, and is protected against violation by legal sanctions. The sanctions, like the legal restraints upon the violation of covenants, arise to supplement the previously existing restraints, as these become seriously inefficacious. The old sanctions do not disappear. Even the courts recognize them. Long possession is truly “*nine points of the law*”; and the old magical practices become formulas for the assertion of legal claims.

Two special forms of legal ownership may be mentioned. The first is the contractual partnership. For many kinds of enterprise a conjoint effort with common means or instruments is necessary, or at least advantageous. But in the simpler societies it is the “*family*” groups that are engaged in such enterprises. Fishing with large drag-nets is a typical example. The net, as well as the haul of fish until it is divided, is group-property. But with the local breaking-up of families in the larger societies, and with the concurrent increase of commerce, artificial partnerships become increasingly indispensable; and the forms of law are required to give these a sufficient stability. The second form, characteristic of the most recent period, is the corporation of limited liability. By means of this device, individual owners are relieved of the necessity of a constant and intimate knowledge of the condition and administration of their property. It is thus far better adapted than the partnership to great business enterprises. On the other

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hand, as we may note in passing, without means of rapid communication it would scarcely be feasible.

As the nature of the property-right changes, so the mode of transfer changes. In the simplest case, the material transfer is sufficient. If a magical taboo has been imposed, it must be carefully raised; and a like taboo is then as carefully instituted by the new owner. If the property is held subject to the good-will of a god or spirit—as land is said to be universally held among the blacks of Africa—his consent to the transaction must be secured. If the right is subject to the suzerainty of an overlord, even an inheritance is not complete until his consent is obtained by homage rendered and accepted; just as the king himself is not secure in his power until he has been duly annointed or crowned. If a legal title exists, the methods by which it may change hands are fixed by the law; and in case of dispute legal evidence is taken in order to determine whether the transfer is valid. The prescription of methods, however, is almost entirely motivated by the desire to make the intention of both parties to an exchange easily demonstrable, and thus make future titles secure. Broadly speaking, a man can under the law instantly exchange anything which he owns for anything which anyone is willing to give for it.

MONEY AND CREDIT

As we have already observed, barter is universally known among men. It is under the limitation that each article in the transaction must be in demand on the part of the person receiving it—generally for his own immediate or early use, but sometimes, and more frequently with the advance of culture, because he counts on being able to exchange it again to advantage. Articles which are in

standard use as ornaments are not only in steady demand ⁴—for there is practically no limit to the amount that can be used—but have the advantage of being easily transported and conveniently stored; and they have a certain restricted use as money even among neolithic peoples—for example, in the purchase of wives and the settlement of blood-injuries. This is, however, far from serving as a general medium of exchange. Cattle, etc., under pastoral conditions, are likewise in universal and constant demand, for, indeed, they are the principal article of wealth; and over short distances they transport themselves under human guidance. Over long distances and by water, they are less easily conveyed; and in complex societies many, or even most, persons have no facilities for keeping them.

The metals—especially silver and gold—of which ornaments as well as other articles of luxury are made, have the further advantage of uniformity of quality and of easy measurement by weight. Their use in barter thus greatly facilitates it. It encourages the growth of larger commercial relations, to which, indeed, it is indispensable. A considerable part of the utility of these metals thus consists in their use as a medium of exchange. With the exact and wide-spread standardization of measures of weight, which like that of measures of length and capacity is necessary for large commerce, the essential conditions ⁵ for the rise of

⁴ In palaeolithic remains in the interior of France, shell ornaments are sometimes found, which can scarcely have come from the sea except through a series of exchanges. Among neolithic peoples, gold and semi-precious stones are among the commonest articles of commerce.

⁵ That is to say, aside from the legal aspects of the matter. The coinage of money is a state function, and the state makes its money legal tender for the payment of debts. The rise of money is thus directly dependent upon political conditions, and indirectly upon all those cultural conditions which have determined the origin of states.

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money are given.⁶ It is only, however, under the most rigid supervision that the counting of coins supersedes the weighing of them, except for the pettiest transactions. This, however, from being a convenience, has in modern times become a practical necessity.

Paper money has several advantages as compared with coin. The first, to which it owes its origin, is its lightness and convenience of carriage, especially when issued in large denominations. The certificate of deposit may represent thousands of dollars or pounds. The second, by no means unmixed, advantage is that it can be issued against securities other than gold and silver—against anything, in fact, that is marketable, allowance being made for the loss attendant on a forced sale. It can be issued, for example, against land; and it can be issued against a promise to pay on the part of a government. There is a constant temptation to increase the amount of currency thus issued, because it seems like an increase of wealth, produced almost without labor, and because it seems to do a service to society by supplying a needful means of carrying on business. As a matter of fact, there is always enough money in the world. There would be plenty if there were only a tenth as much. There may be an insufficient quantity of certain denominations, but never an insufficient total; for the less there is the more in proportion it is worth. The third, still more questionable, advantage of paper money is that it can be issued against no security at all, and yet possess a certain value due merely to its utility as a means of exchange. It

⁶ It may be noted that the metals used for tools—copper, bronze, and iron—were an object of extensive commerce in pre-historic and proto-historic times; and that the practice grew up of dividing them into measures of standard weight, in which form they served somewhat the purpose of money. The "iron money" of Sparta may have been reminiscent of this practice.

is only necessary that the amount issued be definitely limited; for with each increase in the amount issued the purchasing power falls. It was formerly supposed that a quantity of gold money equal to a certain portion of the paper was necessary to give it support; and it is indeed necessary to ensure a certain stability. For gold, having a value in industry, comes into and goes out of circulation fairly easily, as its purchasing power increases or declines. But the paper is only of value in circulation; and hence as the demands of business vary it is subject to unfortunate fluctuations. There is this further inconvenience, that a purely paper money appertains essentially to a certain state. It cannot be melted down and recoinced at will. Hence, when gold ceases to circulate, the fluctuations of international exchange are necessarily great and may be extremely injurious.

But the development of money is of scarcely greater consequence to society than the development of credit. The loan, as has been said above, is universally known among men; but in primitive society the general intimacy is so great that the possibility of refusal to pay is slight. Again, as we saw in the case of labor-covenants, a binding oath may be taken; or a pledge may be given, of greater value than the loan but not so pressingly required. Here, as elsewhere, the law intervenes to do more effectually what has been done long before. It compels, so far as possible the fulfillment of the promise to pay—when made in accordance with the forms which the law itself prescribes. Best of all, it sets up a new form of pledge, the mortgage, by which the material security remains in the possession of the borrower, until, and unless, the loan matures and payment is defaulted. A special form of protected loan is the bond issue, by means of which the total sum to be borrowed is

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divided into convenient standard amounts. This makes it possible for a large number of lenders to contribute, and easy for any lender to sell his claim if he so desires. The widespread participation in loans is the counterpart of the widespread participation in corporate enterprises. The joint effect of both is to encourage the indefinite increase of the magnitude of industrial and commercial units.

It may be remarked, as a further illustration of a very general evolutionary principle, that personal confidence has by no means lost its importance in the domain of credit. Even in the floating of the stock and bond issues of well-known corporations, the names of the officers and directors have often a considerable advertising value. And in the wholesale distribution of merchandise, which is carried out for the most part by means of short-term unsecured advances, the business reputation of the purchaser is a main consideration.

Credit itself can be lent, and a special class of institutions have arisen to perform this function: the commercial banks. Such loans can, theoretically, be obtained more cheaply than any others (the security considered); but unless they are guarded with unusual care, the banking business is decidedly speculative. The banks began, of course, as money-lenders, and developed as lending-middlemen. The fact that they can lend more than they possess or hold is a recent discovery; or rather the ability to do so is a consequence, as well as in some degree a condition, of the new complexity of commercial interrelationships.

The possession of credit, like the possession of land, is an opportunity to work. The larger the credit, the greater the opportunity—if one is prepared to make use of it. By means of credit great enterprises can be built up by the men best qualified for the work; and without it the greatest

enterprises would be impossible. But the cost of credit is a serious burden, and it is easy for the extension of credit to run far beyond the bounds of economic advantage. This is most obviously true in retail trade, where, however, credit serves a somewhat different purpose, acting principally as an encouragement to extravagance. It is here on a par with expensive delivery-systems, return-privileges, and other inducements which competition forces to higher and higher proportions; until some day a new competitor, who offers no inducement whatsoever except a low price, cuts under the whole system and sends it toppling down. But the same thing is true in principle of the credit which is utilized as an addition to capital. There is a very limited utility in owing money to men who would prefer to be using it themselves.

MARKETS

The existence of a market is equivalent to that of a demand which can be counted upon. To have a market for one's property, or for one's labor, means to be able to sell it for something—perhaps a poor return, but better than nothing. In the case of labor, the return must in the long run amount at least to the means of subsistence. In the case of goods, it must similarly in the long run give profits that amount to a living wage. In either case it may do indefinitely more.

This is to define the market from the seller's standpoint; but it may also be defined from the buyer's. The existence of a market is equivalent to that of a supply of goods or labor which one can count upon securing by paying a price, though perhaps a high one.

We most easily appreciate what a market is, when we live for a time where it is lacking. In many country districts

there is no local market for pigs, fowls, or garden-truck, not because there is any scarcity or any over-abundance of such things, but because nearly every family raises enough for its own needs and counts on raising no more. If a sudden need for money compels some one to sell at a time when he cannot go to a market-town, he must hunt about almost at random for a buyer who is willing to give a fair price. If one is in need of such food he may have to spend an unconscionable amount of time ransacking the country-side for some one who is willing to sell. There is no time or place at which the would-be buyer and seller can meet each other. The condition of affairs exemplified by the *peddler's market* is often not far from this, so far as its lack of spatial or temporal organization is concerned. The peddler may, however, develop a route along which he has customers who regularly await his coming. Such a route has the essential characteristics of a true market.

On account of the industrial uniformity and the communistic spirit of early social groups, the primitive market is necessarily intertribal. The sense of mutual advantage has to struggle against mutual suspicion and fear and even against enmity. In extreme instances the "market" is a spot where one party leaves his goods in secret, expecting that some member of the neighboring tribe will find them and leave something in exchange. As the interchange of goods becomes traditional and the realization of the common advantage is clear on both sides, the necessity for such precautions disappears. The commercial relations themselves constitute a real bond of peace, or at least of truce. Since early neolithic times traffic in desirable raw materials, such as stone of peculiar hardness or beauty, has taken place over considerable distances; the materials being sometimes handed on from tribe to tribe, sometimes carried through by

traders who owed their safe passage partly to gifts to the chieftains on their route, and partly to the popular wish to have them come again.

The typical village market is a regularly recurrent assemblage of buyers and sellers at a customary place. Here one brings one's casual superfluities as well as what one may have raised or made for the purpose of sale. Sometimes the market-day is also a day of public worship, and the market-place is in the vicinity of the shrine; sometimes the economic institution is independent. The weekly market-day has persisted in many parts of the world, even in fairly large cities, especially for the sale of food-products such as fowls, eggs, butter, and garden-truck, and also for the sale of many articles to the country-folk who bring in their produce. It has the great economic advantage of bringing produce and consumer together with a minimum of expense. Where the demand is sufficient the market may be busy every day, though with a great increase of activity on the special market-day. The annual or seasonal village fair has an analogous function.

While the market-place provides an outlet primarily for the products of the immediate vicinity, the peddler and the store-keeper supply the demand for goods brought from a distance. They may themselves be importers—the peddler in the literal sense of carrying-in his wares—or the business of importation may be in special hands. In general, each stage of the process of inserting middlemen between producer and consumer must justify itself by the economies effected. In part these economies are those of large scale transportation. In part also they rest upon the “canalization” of trade-information; for the retailer must ordinarily sell goods proceeding from many different sources with which he cannot be in direct communication. The elimina-

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tion of the middleman, which is so often called for by popular economists, is seldom possible except in so far as conditions permit the retailing of a very restricted variety of goods, or where the manufacturer of one line is a retailer of some others also. And while it is to be expected that modern improvements in communication will lead to the consolidation of many steps which have traditionally been distinct, they are also leading to wider wholesale enterprise.

The wholesale fair is a curious reappearance upon a new level, of a very ancient institution. It draws buyers, not only from a single district, but from a whole nation or even from all parts of the world. The great international expositions, held on the pretext of celebrating some memorable event, are a new and wonderful phenomenon; but their utility from a purely commercial standpoint seems to be proportionately far less than that of the specialized annual or semiannual fairs which cater directly to the needs of professional buyers. One of the chief values of a fair is sacrificed when regularity is not secured.

In more than one way markets have become international in scope. Above all else the great stock and produce exchanges illustrate this tendency. Here what may be called the "actual" transaction takes place in the most direct and primitive fashion: by word of mouth, on the floor of the exchange. But through the postal and telegraphic service, and almost equally through the financial reports constantly appearing in the press of whole nations, the exchanges are able to transact the business of men who are thousands of miles from the scene of action. These great markets are almost entirely limited to the evenly divided securities of well-known enterprises or to carefully graded and standard-

ized staples. For these one can buy from any distance, and know what he is buying; and, owing to the existence of the exchange, one can buy them with the full assurance of being able to sell them again at any future time, for some price, low or high. One can also buy or sell for delivery at any specified future time; and thus a way is opened for speculation of the most wasteful character. Theoretically, the speculators do an amount of good in anticipating, and thus discounting, changes that are to come, which more than balances the harm they do by intentionally unsettling the markets. The great injury is a moral one, with economic after-effects of a kind not susceptible of measurement.

It is essential to the existence of a market that the purchasing public which it serves be kept informed as to what it has to offer. For this the unbroken continuity of habit and tradition is generally sufficient, or needs but little supplementation. The fish-wife cries her "Salmon and sole!" Articles for sale are displayed to catch the attention of the passer-by. Signs and emblems are hung out. But the merchant has his regular customers, who continue to buy from him because they have bought from him before. This is illustrated on a national scale in the commercial relations which persist between the colony and the mother-country. But as the territory to be covered extends more and more widely, and as competition increases, other means of securing and maintaining contact come into use. Sometimes through the traveling salesman the market reaches out to the customer's door. Sometimes special efforts are made to inform and attract the possible customer, in order that if necessary he may be drawn out of the ordinary routine of his life—to go where he would not otherwise be led, to desire that which would otherwise escape his notice. This is

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the function of *advertising*; and its immense extension in modern times is one of the remarkable characteristics of our epoch.

TRAVEL AND TRANSPORTATION

Travel and transportation stand in an exceptional relation to all other activities of industry and commerce. The worker and the task, the customer and the goods, must be brought together. Either the men must travel, or the finished or unfinished product be transported, or both. It may be added, that until the most recent times almost all communication with men at a distance has involved travel or transportation; and even today the bulk of telegraphic and long-distance telephonic communications is very small as compared with the letter-post. Thus, directly and indirectly, the whole evolution of commerce and industry, taken in no matter how wide a sense, has been dependent upon the means of transport.

Two things are involved in transportation: the route and the conveyance; and these have grown up together. The route itself is primarily a phenomenon of social psychology, a creature of knowledge and custom rather than a material thing. That the route may exist, there must be a knowledge of the *terminus ad quem*, and of the advantages to be obtained by getting there; for a line along which we may pass, but which leads nowhere or heaven knows where, is not a route. The great routes are those which connect markets. Even as a material thing—a worn line in the grass, a trail of bones across the desert—the route may be at least as serviceable in guiding the traveler as it is in easing his efforts. But the latter function is, of course, in most

cases essential. Man himself, as well as his beasts of burden, needs a path if his efforts are not to be wasted; and the beasts need a broader path than he. And as new means of conveyance are introduced, the route must be largely reconstructed before a full exploitation of the improvement is possible. The wagon with its wheels calls for a road; and as the one gains in lightness the other gains in smoothness. The train must have its rails. The automobile, which quickly tears to pieces the old highways, has brought about an extraordinary movement for their improvement.

The formation of trails is in its origin, and to a considerable extent remains, a purely "natural" process. Man makes them as do other terrestrial vertebrates, following a curious law of least resistance. The reconciliation of conflicting aims—the economy of distance, and the avoidance of obstacles and of steep ascents—is accomplished with little or no reflection; and the travel of many feet stamps out vegetation and hardens the ground. Starting from this beginning, the laying-out and construction of roads have undergone an evolution which is closely bound up with the evolution of industry generally. The bridging of great rivers, the tunneling of mountains, the attaining of lofty passes by grades which never exceed a certain maximum steepness—these are exploits which are far removed from the wearing of the Iroquois trail.

On the sea the building up of routes—here entirely in the psychological sense—has long taken place in a manner which recalls the early efforts upon land. Men felt their way from headland to headland, and from island to island, about the world. The great difference was that while the tread of feet leaves a trace the passage of a ship leaves none. The invention of the mariner's compass went far to

remove this inconvenience—that and the improvements in the measurement of time which made possible the accurate determination of longitude. An immense extension of travel was the immediate consequence. The further consequences can scarcely be catalogued.

Like the construction of roads, the adaptation or construction of vehicles has been closely bound up with the industrial evolution of the race. Man himself is, of course, long the sole beast of burden, using only a pack—or, on the snow, a sled—to increase his effectiveness. The domestication of such animals as the ass, the camel, and the buffalo supplied a new source of power; and it is worthy of note that this was first used for transportation, and that for many ages, aside from the closely analogous drawing of the plow, animal power was almost exclusively used in transportation. Wind-power, too, was first used for this purpose. In recent times, the steam-engine, the electric motor, and the internal-combustion engine have been quickly applied to the means of transport; and the gasoline engine, by reason of its extreme lightness, has made possible a wholly new means of conveyance, less important, however, for transportation of goods than for travel: the airplane. The wheel also belongs in its beginnings to the vehicle, unless the potter's wheel can claim an equal antiquity. The introduction of new materials, whether as used in tools or in the vehicles themselves, has profoundly affected transportation. Thus prior to the introduction of bronze there is almost no commerce by sea, even along the coasts; for without metal implements the construction of really sea-worthy boats is practically out of the question. The recent revolution in ship-building, caused by the use of iron and then of steel as the principal material of construction, scarcely needs to be mentioned.

THE DIVISION OF LABOR

We have now passed in the briefest review the various principal modes in which the exchange of services and of goods is effected, and of the principal instrumentalities—money and credit, markets, and transportation—by means of which the exchange is facilitated or made possible. It will be remembered that there are two questions that we have to deal with: first, what is the effect upon the processes of industry, of the improved coöperation? and, secondly, to what general and perhaps deeper-lying conditions can this improvement itself be reduced?

The first question leads at once to the consideration of the *division of labor*; for, roughly speaking, this is at once the cause and effect of all coöperation. It is only on the basis of a division of labor that the conditions for a customary exchange of goods can exist. He who expects to sell must have wants which his own efforts have not supplied. He who expects to buy must have produced some good thing beyond the needs of his own household. But each extension of the possibilities of exchange gives a new encouragement to the division of labor. It makes it possible and profitable to neglect tasks which one has hitherto had to perform, but which can now be left to others.

That the division of labor, if not absolutely essential to industrial progress, marks every considerable advance since the beginnings of neolithic times, will not be contested. If at first sight it seems that certain complex industries have grown up without their being divided between different hands employed in distinct processes, a closer examination will generally show that there is a preliminary tool-making or preparation of materials. Thus it is not long since the American housewife carried through to com-

pletion the whole process of garment-making, from the receipt of the wool from the shearers to the finished coat or stocking. The washing and carding of the wool, the spinning and dyeing of the yarn, the weaving (or knitting), the cutting, sewing, and pressing, were all a part of her traditional duties; and these were combined with the care of children and barnyard animals, as well as with the various processes of housekeeping. In a given household these tasks might be variously divided up among the girls and women; but there was little or no permanence in any such division. However, the spinning-wheel and the loom, the dyeing-cauldron and the shears and needles of various types were the work of skilled artisans, without whose concurrence the whole business of garment-making would have come to a standstill. On the whole, it is scarcely an exaggeration to say that the division of labor is a universal condition of industrial progress.

The division of labor is of two principal kinds, which may be called *geographical* and *social*. The first is a division between localities, occasioned by differences in convenience of position or in natural resources. The second is a division within the community itself, unforced by any external condition. The two kinds are alike in securing the advantage of *specialization*; and this constitutes the principal *raison d'être* of the second kind.

It should be noted that the division of labor depends to only a very limited degree upon natural differences in individual endowment. To be sure, a hundred peasants, when compared with a hundred carpenters or smiths, will show a considerable number of common differences; but these are mostly consequences, not causes, of the difference in occupation.

There is, indeed, one natural cleavage which has been of

great importance—that between the sexes. The greater agility and strength of men would not in themselves count for much. Men also differ in these respects among themselves. One savage is a better hunter than another, but that does not prevent all from being hunters; and many women are fully as capable of succeeding in the occupation as many men. The recurrent incapacity for violent exercise, which comes with pregnancy, would not prevent such exercise at other times. But for two years at least the savage child must be given the breast, and for a much longer time he requires occasional assistance or protection; and as civilization advances the dependence of the child upon the mother rather extends than diminishes. Thus a general condition of woman's labor has been that it shall not separate her from her little children. But even this natural constraint is subject to endless modification. In the first place, it is conventionalized and made absolute, and enforced by magical taboos or by the scarcely less binding popular prejudices which succeed taboos. The childless woman, just because she is a woman, is as much bound as any other. There is men's work and there is women's work, and she must do her own. In the second place, the dividing line is shifted in every possible way. There are few occupations from which women have not been excluded, and there is none which has belonged to them exclusively. The actual division of labor between men and women at any time and place is a typical phenomenon of custom.

The distinction between the *sacred* and the *profane* goes back as far as historical conjecture can carry us. Religious rites must be performed by those whom birth or initiation has set apart for the purpose. There may, indeed, be no special class of priests, some members of the tribe being qualified for certain rites and others for others.

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Nevertheless the formation of a more or less distinct priesthood is a general accompaniment of a settled mode of existence. Again, as there are sacred things which only the initiated can touch, so there are accursed things which the initiated, or perhaps even ordinary men, cannot touch without defilement, and which must be left to those who are, so to speak, defiled already.

Agriculture in its cruder forms is often carried on by women alone. This is evidently due to the fact that the gathering of vegetable food, out of which the art has developed, is, among the more primitive peoples, a characteristically feminine occupation. But the custom gains a certain reinforcement from the belief that women, by reason of their character of child-bearers, help to ensure the fertility of the fields. Among the African Negroes, all industries except those directly concerned with the providing of food, clothing, and shelter are generally in the hands of special castes, to which they belong by immemorial tradition. It is not simply that the secrets of each trade are jealously guarded. As the natives understand the matter, each caste has a magic of its own, to which, quite as much as to the technical procedure, success in the operations is due. To learn the trade, it would be necessary to become a member of the caste; for to acquire its magic implies entering into relation with its spirit-allies, and hence the loss of one's own former spirit-allies.

In such cases the advantages to be gained by specialization or by patronizing the specialist do not enter as factors in directly producing the phenomena. In varying degrees, however, these advantages are enjoyed. The division of labor on a magical basis involves waste, as magic invariably involves waste. But in the long ages through which savage life persists, the division is subject to a crude natural

selection—as, again, is true of magical practices in general. The division that we find is at least a practicable mode of distributing the work of the community.

In more advanced societies, where a system of apprenticeship takes the place of the caste system, there is more scope for the natural aptitudes of individuals. But this advantage is counterbalanced by the loss of the intimacy which under the old conditions attached father and son—and which had a very great educational and economic value—and by the tendency to victimize and exploit the apprentice to the utmost. The real superiority of the new order lies in its relative flexibility, and particularly in the freedom it allows for *purposive specialization*—the narrowing of an occupation with a view to securing greater efficiency. Thus within each particular trade a new specialization may arise; and this may have any degree of exclusiveness. For a time, or even permanently, the general occupation may remain alongside of the special, or even conjoined with it in the same person. Contrary to the singular opinion which Durkheim expresses, the men who create a new specialty are not weaklings, who seek relief from a competition they could not otherwise support, but men of more than ordinary ability, who are attracted by the prospect of an interesting life and large economic rewards.

In modern times the conditions of apprenticeship have tended to become more and more informal, until in many occupations they can hardly be said to exist. On the other hand there has been a great extension in the occupations requiring a long preparation during which no economic work is done—the learned and artistic professions. In these the selection of workers on the basis of personal ability is especially effective—more so than in any other field.

Specialization brings with it disabilities, as well as abili-

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ties, and in the popular mind it is as much defined by the former as by the latter; that is to say, the specialist is conceived as the man whose knowledge and skill are confined to a single field. This is an exaggeration, and, indeed, a serious misconception. Special ability almost always rests upon a basis of far more general ability. This is most easily seen where the specialization has gone farthest, as in science and engineering. In so far as specialization involves knowledge, taste, and practical judgment, it is a positive, not a negative, thing. The limitations are set by the talents and above all by the ambition of the individual.

There is another phenomenon incident to the division of labor, which is frequently confused with specialization, to which it bears a superficial resemblance. For want of a recognized distinctive term, we may call it "piece-work."

Piece-work is a product of modern factory-organization, though it is now by no means confined to factory workers. When each petty stage of the process of manufacture is assigned to a particular individual or group, the mechanical habituation that results gives to the operation something of the uniformity and swiftness of the movements of a machine. Intelligence and voluntary control are as far as possible eliminated, for each moment of hesitation is a moment lost. The curve of proficiency rises rapidly, reaching its highest point during the first few months, and then, as a rule, soon begins slowly to fall as a result of nervous wear and tear; for competition tends to raise the speed to a practical maximum and beyond hygienic limits.

Piece-work is not specialization. The proficiency which it secures is not skill. Socially as well as psychologically they are whole worlds asunder. The farther specialization advances, the more the worker becomes self-directing. He receives commissions or even commands; but in the execut-

ing of them his own judgment is almost necessarily of weight and often it is supreme. The piece-worker is essentially an underling and less than an underling—a piece of unintelligent machinery from which no opinions are expected.

But whether it shows itself in specialization or in piece-work, the division of labor among civilized men differs from the division among the uncivilized, in being *more directly a product of motives of economy and efficiency*. The difference is great, though it is easy to exaggerate it. In modern times also, each existing division has something of the force of a blind custom; and it is often powerfully supported by voluntary associations of workers even under circumstances where it involves inconvenience and serious waste. But the superiority over the primitive condition is none the less manifest; and it is typical of the differences between ourselves and the nature-peoples. The same sort of difference can be pointed out between their art and ours, their morality and ours, their military and industrial methods and ours.

With regard to the strictly geographical division of labor, little need be added. The reader may be reminded, however, that divisions which are geographical in origin may persist from sheer social inertia long after the difference in local resources has been neutralized or even reversed. When new and superior deposits of the raw materials are found, it may long remain unfeasible to work them up on the spot, no matter how convenient the location may be with respect to power and transportation. A supply of properly skilled labor must be had; and this can not be created out of hand, and is slowly, if at all, induced to migrate. Hence it is frequently easier and cheaper to send the raw material for considerable distances to the old seats of the industry than to attempt to build up a new local enterprise.

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For the purpose of our present study the difference between the geographical and the social division consists principally in this: that in the case of the former the economic advantage is relatively patent even under primitive conditions.

LIMIT OF THE DIVISION

Since the time of Plato the advantages to be derived from specialization have been familiar to students of society. Plato himself went so far as to erect the division of labor in accordance with individual ability into a supreme principle of social justice. The disadvantages of specialization, however, have generally been ignored; and yet these may be serious. The work that is broken up must be recombined, and the parts must be kept in mutual adjustment. Now this involves a certain expenditure—what, with a rude stretching of the term, may be called the *cost of distribution*—and it is easy for this cost to exceed the gain. Thoreau declared that it took more time for him to earn and save the cost of a railroad ticket to Boston than the difference between walking and riding amounted to; and this condition may often exist. Moreover, when once the division of labor has been established, it tends to persist like any customary standard of action, even though it becomes distinctly disadvantageous; for an occupation that has been given up to a special class of workers can not be easily reassumed by a larger body or by the general public. In general, and in the long run, however, the “marginal” gain and loss are not far from equal; that is to say, *the division of labor tends toward the point beyond which the increasing cost of distribution begins to make it unprofitable.*

We are now prepared to see how the division of labor is

affected by the development of those forms and factors of coöperation and exchange which were noted above. The answer to that problem is as difficult in many of its details as it is simple and obvious in a general way; but it is the general principle that alone concerns us.

The influence which we can attest is in the main permissive, rather than active. It does not directly produce the division of labor, but favors it: that is to say, it constitutes an increasingly favorable condition for the persistence of any alteration in the direction of further division, by whatever agency this may have been produced.

All division of labor depends, directly or indirectly, on the possibility of coöperation. If man is to hunt and woman to gather, there must be some means by which each is to enjoy the product of the other's toil. Within the limits of the family-group no difficulty is felt on that score. If one tribe manufactures an excess of polished flint implements, and another neglects this work in order to dig salt, there must be some way by which the latter can give up a portion of its salt for the tools and weapons which it needs. Barter, carried on at points of intertribal contact, may suffice. The larger the scale on which the division of labor operates, and the greater the degree to which it is carried out, the more marked is the need for prompt and flexible means of exchange. In order that the great modern world of industry may exist, the interchange of products must be prodigious and incessant. Interference with any of the factors involved results almost immediately in disorganization and stoppage. On the other hand, each new instrumentality of credit, each new railroad or steamship line—in short anything that facilitates exchange, or, as we have roughly phrased it, *reduces the cost of distribution*—creates an opportunity for specialized industry.

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The principle is most vividly illustrated in the case of transportation. The economic history of the United States is especially instructive, because in the change from pioneer conditions to those of the present day every stage in the development of transportation is exemplified, and its relation to industry is exhibited with impressive clearness. The frontier family, isolated from the world except for a single trip each year to the trading-post, was of necessity almost entirely self-supporting. Weapons and metal tools and salt were imported. Almost everything else was made or procured on the spot. The pack-trail and the raft have given way to the wagon-road and the steamboat and railroad line; and the grandson of a pioneer spends his life cutting carpets or grinding lenses; or, if he be a farmer, his wife can not get him to plant her a kitchen-garden, and they eat canned peas and tomatoes from the city. But if the influence of improved transportation is visible even to the uninstructed, the influence of banks and exchanges is no less evident to the economist. The popular mind has become accustomed to look upon Wall Street as an organization of financial bandits, forgetting that it is by reason of the essential function which Wall Street performs that it is able to exact so heavy a toll from the industry of the country.

It may be objected that we have inverted the true order of dependence; that the mechanism of exchange is the product, not the condition, of the division of labor. It is obvious, for example, that without a more or less permanent division of labor no markets could exist. Furthermore, apart from the added efficiency derived from the division of labor, exchange has no reason for existence—unless imported luxuries be placed under a different heading.

Commerce does not exist for its own sake. It exists in order that men may be supplied with desirable goods which they could not so advantageously, if at all, produce for themselves. In itself it is a sheer expense, and a very heavy expense indeed. Under modern conditions retailing alone frequently adds as much as one hundred per cent to the cost of commodities.

But facts such as these merely serve to illustrate the maxim (which we studied in an earlier chapter), that the end comes before the means. They do not contradict the fact that the improvement of the means is a determining cause of the expansion and development of the end. And that, as we have seen, is the universal rule. A certain informal and unreflecting interchange of goods and services is doubtless as old as humanity. The measured exchange of equivalents, however, is a culture-phenomenon, which arises because it facilitates the satisfaction of many wants. But each improvement in exchange, providing, as it almost necessarily does, a larger and steadier demand for various sorts of labor, puts a premium on specialization. The market, for example, in which goods are accumulated for sale, permits those who manufacture for it to keep up their work regularly for weeks or months beforehand. There may be occasional loss when an anticipated demand fails to materialize. But losses of this character are commonly negligible in comparison with the gains. Manufacturing for the market pays and extends itself, and the greatest improvements in method accompany its extension. While, therefore, there must be a division of labor if markets are to arise, the rise of the markets encourages a far greater division of labor. The like is true of the introduction of money and the growth of credit.

CONCLUSION

If we now glance back over the preceding pages and consider the general nature of the factors and conditions of direct and indirect coöperation which were mentioned, it is at once seen that they all are, or involve, phenomena of social psychology; that is to say, they are all, in the broadest sense of the term, phenomena of *custom*.⁷ Gold coin is hard metal, as grossly material as anything can be. But it would not be money if it did not pass as money. A modern bank-building is a ponderous stone structure with huge steel vaults; but the bank exists because men have learned to borrow credit. As a matter of fact, a custom generally builds for itself a material basis or instrument. Worship has its shrines and images; the councils of government have their halls and platforms. Just so the immemorial right of way through an English estate is marked by a narrow trail across the lawn. And, generally speaking, the material embodiment of a custom is a not unimportant factor in the maintenance of the custom; often it is an essential factor. But the custom itself remains none the less fundamental.

A more attentive examination serves to show that the many particular customs involved in the economic development which we have considered belong to great systems which may be comprised under the term, "customary organization of society." This was pointed out in passing with respect to the conditions of the direct exchange of services. But kinship, arbitrary power, and civil liberty are influences which pervade every phase of economic activ-

⁷ The French or German reader who may chance upon these pages should bear in mind that the English term "custom" is capable of bearing a wider denotation than "*moeurs*" or "*Sitte*." Here it is used as an equivalent for "*habitude collective*."

ity, and indeed every phase of human life. We see this influence in the various forms of property-rights. The limited corporation, for example, is not only a creation of the law but a revelation of the spirit of modern civil society. We see it in the rise of money, the coining of which early became an important economic function of the state. We see it in the whole development of credit and security, from the oath and the pledge to the mortgage and the mortgage-bond. And the same is true of the market. Originally, as we have seen, the market had no place within the tribe. A simple communism within local or family groups, together with occasional gifts outside such groups, sufficed. It is intertribal exchange that brought the market into being, as a steady demand arose for things which the tribe itself could not provide. For the rise of the common village market nothing less than a social revolution was necessary, a radical reorganization of the conduct of life. It meant that the old semi-instinctive community of interest had shrunk within narrow limits, and that in the exchange of goods a new community to serve for the given occasion—the bargain—must be established.

Here, then, in brief, are the answers to the two questions which were raised at the outset of this long discussion. (1) All industrial progress depends upon the division of labor, and this is favored by everything that tends to reduce the cost of distribution. (2) The cost of distribution is determined to a material degree by forms and instrumentalities of exchange which belong to, or are closely involved with, the customary organization of society.

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CHAPTER XIII

THE IMPROVEMENT OF COMMUNICATION

IN the following pages we shall consider how improvement in the means of communication has been connected with human progress generally. The facts to be brought forward are for the most part well-known or even notorious; but it will be not uninteresting to view them in their *ensemble*.

Two large omissions will be made. The means of communication are in part means of travel and transportation; and improvement in these respects has consequences altogether analogous to improvement that affects the means proper to communication alone. In this place we shall explicitly consider only the latter. Furthermore, as the social relations between men—by blood or marriage or through religious, industrial or political association—vary in range and intensity, the possibility of communication increases or decreases. These relations are, indeed, themselves dependent on the means of communication in the narrower sense of the term; but they are causes as well as effects. The isolation of the new-comer in a great city has often been remarked. Men and women are all about him, speaking his own tongue; but he cannot speak to them, and if he did they would give him little attention. The development of social institutions of every kind facilitates communication between some men, though it may hinder it between others. These effects also will for the present be

left out of account. It may be hoped, however, that with the subject thus restricted certain lines of influence will be thrown into clearer relief.

SPEECH AND GESTURE

It is by the function of speech that man is most obviously set off from the brutes. To imagine them as speaking, as ancient fables and their modern imitations invite us to do, is to conceive them as essentially human. But this is not merely because speech is so remarkable an accomplishment in itself. It is because it determines a certain mode of co-operation, a complex interadaptation of the action of several or of many individuals, which is not otherwise possible.

Not simply the announcement of an intention or the uttering of an admonition or a command is serviceable in this way, but the statement of facts with reference to the common situation in which a number of persons stand. Many animals can utter warning cries to their young or their companions, cries which prompt instinctively to a certain type of responsive behavior; and these cries serve to fix the hearer's attention upon the thing or circumstance that accompanies them. But the statement of fact does more than this. It extends the perceptible environment, and extends it for a whole group of men, so that they can act together in view of the situation of which they become jointly cognizant. Again, speech expresses not simply the attitude of the speaker toward a given circumstance, nor even merely the sympathetically appreciated position in which other men may stand. It is objective. It predicates qualities of objects and ascribes relations to groups of objects; it even asserts relations between the qualities and

relations which are found among things—all this irrespective of the peculiar interests or the very presence of any human observer. “London Bridge is falling down” has the same meaning whether you wish to cross or not. And this very objectivity of language is the ground of its supreme usefulness. In view of the information that the bridge is falling down, each of us can act as suits him best; and, above all, those of us who have common interests in the matter can act together.

It has been observed¹ that there is a very close relation between the objectivity of language and a certain general characteristic of another of man’s peculiar powers—tool-making. The utility of the tool depends not simply on its relation to the human organism, but also on its relations to the things upon which it is to be used. The flint is chipped until it has a sharp cutting-edge. Now sharpness can be felt with the finger, and the sharp edge can give pain by cutting the skin. But sharpness is not signified only by sensations of touch and pain. The sharp flint cuts any softer object upon which it is struck; and the results of the blow may be perceptible, directly and indirectly, in an infinite variety of ways. In other words, sharpness is a *physical property*. What is sharp is sharp independently of human thoughts or wishes in the matter; and, for that very reason, the sharp tool gives to man a control over nature which can be exercised upon an infinitude of occasions and for an infinitude of purposes. The close relationship between the faculty of language and the faculty, if you will call it that, of tool-making is unmistakable. They cannot have had altogether separate and independent

¹ The reference is to a work by Dr. Grace A. de Laguna, on *Speech, its Origin and Function*, which is not quite ready for the press.

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origins; and it may be argued that the intellectual power secured in the acquisition of speech has been a prime condition of the manufacture of tools.

The primitive implement—the club—is, indeed, rather selected than shaped. What shaping is necessary is of the simplest kind, and serves principally to make the club more convenient to wield—to adapt it to the man's grasp and to the swing of his arms, rather than to the nature of the object upon which it is to be used. But in the shaping of a flint-edge certain simple concepts are involved: *straight* and *sharp*. Simple as these concepts are, they represent a considerable effort in the way of synthesis. They sum up a large mass of perceptual experience. Now without language such a summing-up can not go far. Whether thought without language is possible or not is largely a matter of definition. Certain it is that without language thought lacks in steadiness and definiteness. The making of a typical tool is a sustained rational activity. It involves not only the adaptation of means to ends, but the systematic modification of appropriate material according to a pre-conceived design—and this not a mere mental picture, but an intelligent plan. Without the instrumentality of language such behavior seems to be impossible.²

The part which language plays as an agency of co-operation is misunderstood, if attention is confined to the

² The high-water mark of animal intelligence is probably the feat of the chimpanzee Sultan (reported by W. Köhler in *The Mentality of Apes*), in narrowing down a stick so as to make it fit into the end of a hollow cane, in order that with the lengthened cane he might secure a desired bit of fruit. This was reached as the result of a series of carefully planned and increasingly difficult tasks at which the ape was set by the human experimenter. There is no reason, however, to suppose that similar results might not be achieved without human interference. But such a feat amounts to no more than a feeble anticipation of what is involved in man's tool-making.

direct stimulation of coöperative activity among adults. Its part in habit-formation ought not to be ignored. All that man does he must learn to do; and, in the learning, language is either necessary or serves materially to abbreviate the process. The significance of man's protracted helplessness has been exhibited from various points of view. Of the several aspects of the matter only one concerns us here: the fact that infant helplessness marks not only the need but the possibility of education. The baby can do almost nothing, because he inherits few motor coördinations sufficiently complex to serve any immediate purpose; but the fragmentary and random movements that belong to his natural endowment are capable of being organized into conduct of the greatest range and variety. If man were equipped by heredity for any particular environment or any particular mode of life, he would not be capable, as he is, of adaptation to almost any environment and to almost infinitely diverse modes of life. What instinct denies, habituation confers. But the habituation is not controlled merely by the individual's success or failure in his attempts. Several other factors intervene. Like the cat who "teaches" her kittens to hunt, we bring our children into situations in which specially advantageous practice can be had. Moreover, to a degree far beyond anything which we can observe in other animals, our actions attract the interest of our children and lead them to make similar attempts; and in this way their experience is led into profitable channels. But imitative learning suffers from at least one grave defect: it is not analytical. As in the case of the imitation of a new vocal sound—say, a French *u*—the learner is compelled to make a vast number of ill-directed attempts before a few happy accidents teach him what is requisite. The process can be very greatly

abbreviated if the act to be performed is analyzed into parts, all or most of which lie already within the learner's power, and the way to success is thus definitely indicated to him. For this purpose, language is almost indispensable, especially when several component parts must be performed at once. When the French instructor says: "Put your lips in the position for saying *oo*, and then, holding them there, try to say *ee*," he spares the pupil an untold amount of misdirected effort.

As civilization advances, language plays a larger and larger part in the direction and abbreviation of the habit-forming process. From the standpoint of mere time-economy we can see how this must be. The larger the inheritance of acquired ability that must be transmitted to each new generation, the greater the need for celerity and the more important the elimination of wasted efforts. But the possibility of such elimination depends upon the continually increased measure in which human activities are conceptually understood—which is as much as to say, spread out before the mind upon a framework of language.

Language is objective in its reference; language is analytical. It is by reason of these properties that it makes of human society something unique in nature. We perform deeds with names upon things with names; and our movements are concerted in an infinitely variable fashion by means of combinations of signs, which, taken separately, call as a rule for no action at all. We have, to be sure, a certain equipment of instinctive cries; but these are utterly inadequate to the task of coördinating our acts with those of our associates. We effect this by the miracle of speech. Through symbols that denote, not specific needs nor specific means of satisfying them, but objects and qualities and relations, we give expression to an endless variety of de-

sires, and contrive their accomplishment in ways appropriate to the particular features of each particular situation.

It is well known that among many savages there is a very extensive gesture-language. For reasons which will shortly appear, we must devote some attention to it in this place. With us gesture has dwindled to a mere ornament, or means of emphasis, of speech—except, indeed, for a few isolated signs such as pointing, beckoning, nodding, and shaking the head. But many peoples not only have a large vocabulary of signs but combine these together in sentences by means of a simple but effective syntax. Among the North American Indians the gesture-language has been particularly important, serving as a means of intertribal communication where the spoken languages were widely different from one another. Certain facts with regard to gesture-language are of considerable theoretical interest. In the first place, wherever found it is substantially one and the same. There are wide differences of “vocabulary,” of course; but the principles of sign-formation are everywhere identical, and so also are the few syntactical principles; so that men from the most widely separated parts of the world have learned to converse fluently with each other in a very few days. It has been observed also that deaf-mutes, even when they have been taught to spell out with their hands a modern European language, spontaneously develop in their intercourse with one another a use of gesture which is closely similar to that found among savages. Actions are expressed in pantomime. Objects which happen to be present are denoted by simply pointing to them; and so also are the easily noticeable qualities of such objects. Absent objects are denoted in various ways; sometimes by means of some action commonly associated with them, sometimes by drawing their outlines in the air. There is no distinc-

tion of parts of speech, and of course no inflection; so syntactical relations must be indicated almost entirely by the order of signs: *e. g.*, subject, modifier, object, verb.

There is a close and evident analogy between the gesture-language and the "monosyllabic," or "isolating," languages of China. These too are destitute of inflection and even of agglutination; they know no distinction of parts of speech; and the structure of the sentence is indicated by the order of words. The resemblance is heightened by the presence of a great number of imitative words, such as *croak* and *cuckoo*, in which Old Chinese, for example, is extraordinarily rich. Many philologists have inclined to the opinion that the isolating is the oldest, as it is evidently the simplest, type of speech. This view, to be sure, is not so commonly held as it was a generation ago. It has been observed that English, after a long career as an inflectional language, is steadily drifting toward the isolating condition; and it may well be that the Chinese languages have in long forgotten ages passed through a similar series of changes. But the resemblance between the isolating languages and the gesture-language suggests that this type of structure may after all be primitive.

The further suggestion has not been lacking that gesture is older than speech and that the rise of the latter was made possible by the presence of the former; but in support of this theory there is little to be said. Gesture as we know it is everywhere subordinate to, or a mere substitute for, speech; and there is no reason to suppose that this has not always been the case. To listen does not require a precise adjustment of the organ of hearing, as watching does of the organ of sight. So long as I am dependent on gesture for the expression of my thoughts and feelings, I am helpless unless the eyes of my friend are fixed upon me. Moreover,

speaking does not require the momentary devotion to it of the whole body, as the making of gestures often does. I can say what I will in the midst of another occupation. Altogether apart, therefore, from the comparative richness of the vocabulary, communication by means of speech is intrinsically much easier than that which is confined to gestures; and it is also much more intimate. Those who are united by gesture only, remain in a relative isolation as compared with those who enjoy the free intercourse of speech; and the disadvantage is not greater now than it must have been in the early history of humanity.

Speech and gesture not only serve the private needs of men. They enter into art in the form of the traditional song and pantomimic dance; and, in particular, they enter into religious ritual. The customary standards of conduct also find their expression in language, in the form of proverbs and maxims, as well as in the form of "divine" laws, which are either absorbed by the child from the conversation of his elders, or are communicated to him in a formal way before he is admitted to the privileges of maturity. In these ways, among others, language becomes the basis, not only of the narrower personal relations, but of the wider and more permanent relations which constitute the structure of society. We must not forget, too, the public assembly, in which those whose opinions are considered worthy of respect discuss proposed measures and come to a common decision.

WRITING

The first important extension of the means of communication is *picture-writing*. It is important to note that this extension was on the side of gesture, not of speech. A piece

of picture-writing is not a representation of a series of words; it is, in a curiously modified form, a series of gestures, in which drawing takes the place of pointing as well as of pantomime. Accordingly, whatever may be the character of the spoken language—and among the American Indians an extraordinary variety of speech is found—the primitive written language is always syntactically of the isolating type. The historical significance of this fact will be evident in the sequel.

What are the advantages of picture-writing? In a crude way, they are those of writing generally. Inscribed upon stone, it provides a permanent memorial of momentous events. Traced upon birch-bark or other light and portable material, it becomes a means of making a message independent of the accuracy of the messenger's memory. But from the savage's point of view there is far more than this in the matter. The record carved in the rocks is not only there to be referred to at will; but it is as if it were continually being proclaimed. The message on the birch-bark is to the recipient almost as if the sender were before him; for it retains a mystic connection with him whose hands traced its outlines. Picture-writing enters into decorative art; and—like everything else that is human—it has its place in the religious life. Very possibly this last use is the oldest. The painting or carving or tattooing of pictures or conventionalized symbols for religious purposes is widespread among paleolithic peoples both of the present and of past ages; and it is natural to suppose that the organization of symbols into the form of a definite narrative of events first took place in connection with ritualistic practices.

Picture-writing is a characteristic mark of neolithic culture; though not all neolithic peoples practice it, just as not

all bronze-using peoples are familiar with the improved forms of writing which follow. Among paleolithic tribes only anticipations of it are found. Now neolithic peoples are capable of a varied industry, with a commerce extending by relays over long distances; and they are also capable of forming well-organized leagues or alliances. Is it the more complex social life that has called into existence the new method of communication; or has the latter been to some extent a factor in making possible the former? Both, no doubt. A need must be felt before a new device can be appreciated. Why should men wish to record upon the rocks what could be perfectly well transmitted from mouth to mouth? Why should one prepare a piece of birch-bark for a messenger to carry instead of bidding him repeat the message as it was told him? There must be some motive for taking the trouble or it would not be taken. On the other hand, although one would not wish to exaggerate the importance of so clumsy a medium of intercourse, we must admit that picture-writing contributes something toward the overcoming of time and space and hence to the greater stability and the larger extension of social relations. Here, as elsewhere, the end comes before the means, but also the means can hardly fail to react upon the end. When, for example, one council of chiefs sends a written message to another, the visible token of their will or judgment commands a peculiar respect. The two bodies are brought closer together, and a more definite coördination of their activities becomes possible.

It is well known that the written language of the Chinese was in its origin a picture-writing. Many of the characters are even now easily seen to be simplified and conventionalized drawings. The same origin is ascribed to the Egyptian hieroglyphics and to the cuneiform characters of the

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Assyrio-Babylonians. It would be a mistake, however, to suppose that the successive modifications which have occurred are merely of the nature of simplification, though the economy of time and materials thus effected is, of course, not to be despised. A more important change is the gradual adaptation of writing so as to make it an adequate representation of the *spoken* language.

In the case of Chinese the problem involved was most simple. The similar grammatical structure of the spoken and written languages was an auspicious circumstance. It was only necessary on the one hand to extend the list of characters so as to make it co-extensive with the vocabulary of spoken words, and on the other hand to relieve the strain upon the memory as far as possible by introducing the *phonetic* principle. In Chinese there are many sets of words which are pronounced alike or differ only in the mode of intonation. For such a set a single symbol could often be made to suffice, the character corresponding to one word being made to serve for the rest. In the languages of the nearer East a very similar process took place, except that the polysyllabic character of the words and the vowel changes which in some cases they undergo made the adaptation much more difficult. Phonetic identity could for the most part only be found between syllables or the elementary sounds of which these are composed. The drift was, accordingly, in the direction of a partly syllabic, partly "literal" *alphabet*, in which characters that had formerly stood for definite words now stood for parts of many words. With time the original sense of the characters might be lost, and was necessarily lost when their use was transmitted from one people to another speaking a different language.

The stages of this transition are stages in the history of civilization. Broadly speaking, as picture-writing char-

acterizes the new stone age, hieroglyphic writing characterizes the bronze and the early iron age. The whole life of the times bears the impress of its influence. The proclamations of kings, the codes of laws, the formal contracts, the prose literature of prayer and homily and more or less religious historical narrative, and finally the astrological records, the rules of mensuration, and the maxims of medical and metallurgical practice all exemplify the importance a reasonably accurate and compact representation of speech now assumed. If kings could not publish elaborate edicts there would be no kingdoms of great magnitude. If laws could not be recorded with precision they would not be organized into systematic codes. Without the evidence of the written contract it would be difficult for a wide-spread commerce to develop; and it would be impossible for the sentiment of personal freedom and initiative to make itself room amid the restraints of immemorial custom. It is unnecessary to specify further. If human society is distinguished from the so-called animal societies by the part which language plays in the coördination of its activities, civilized society is distinguished from uncivilized by the part which is played in it by the written word.

With the appearance of the true alphabet, a prodigious advance is accomplished, which may well be regarded as marking an epoch. By means of this device two hitherto incompatible ends were reconciled. On the one hand, writing became a practically perfect representation of speech—even of speech characterized by inflections and internal vowel-changes. On the other hand, the number of characters was reduced to little more than a score; so that all excessive strain upon the memory was eliminated. With syllabic writing this is impossible. The number of dis-

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tinct syllables is too great. Either the representation had to be inadequate, or writing was an art requiring a long and hard apprenticeship. But now in a few months a boy of ordinary intelligence could learn to put into visible form anything that he could utter.

What are the characteristics of the new age? The first is an enormous extension of commercial enterprise. Here the causal relation is manifest. More, indeed, than reading and writing is necessary to give commercial ability; for there are literate peoples in plenty which show little of it. But the great and rapid extension of enterprise can fairly be attributed to this factor. For commerce of any magnitude requires correspondence and more or less elaborate records.

The second characteristic which we note is the legislative assembly. It might, on a superficial view of the matter, be supposed that the law in written form would be less easily amendable. Precisely the contrary is the case. The unwritten law must be accepted as it stands. It may, indeed, change; but the changes which it suffers are not due to men's deliberate intentions. Put the law in writing and you expose it to comment, for you need not by admitting a modification at one point jeopardize the authority of the whole. Each new piece of legislation is at once definitely incorporated into the system of law. Its relation to other statutes as well as to immemorial customs can be studied and exhibited. Thus the written form, and especially the perfectly flexible form of alphabetic writing, gives to the law a power of persistence through change; and an essential condition of democracy is realized.

In the third place, there is a notable development of prose literature, associated with which is the origin of Greek science and history—that is to say of science and history ani-

mated by the critical spirit. There were, indeed, other very important conditions in Greece which favored critical thought. There have been many alphabets, and but one Greece. But it is none the less clear that without the alphabet—that is to say, without the exact written record of observations and proofs—critical thought could not have advanced far.

THE VOCABULARY

Meanwhile it was not merely by the perfecting of phonetic writing that the means of communication had improved. Every phase of human progress is marked by language changes. The syntactical changes are less significant than is often supposed, but the changes of vocabulary are of the utmost importance. A distinction in terms marks an interest in things. As we have elsewhere had occasion to note, savage vocabularies are not scanty. On the contrary, they are exceedingly copious. But primitive man classifies less than we do; and he also classifies very differently, observing distinctions which for us are beneath notice or are altogether unreal, and ignoring others which stare us in the face. The same is true in principle of the languages of pastoral nomads and those of peasants. They are rich enough in their own way. Thus the Arab, like many other men, has no separate terms for green and blue; but he has an unbelievable number of color-names such as *bay* and *sorrel*, which apply only, or primarily, to horses. It is this which largely accounts for the tenacity of local dialects. The more polite tongues with which statesmen and educators have tried to replace them give the impression of being poor and flat in comparison. But it need scarcely be said that if, with the progress of civilization, languages lose much, they also gain. Even a game like chess or baseball

or poker has its own vocabulary. So has every trade or occupation; while the upbuilding of a science is marked at every step by the creation of new terms.

Now this progress of language plays a very essential part in social evolution generally. Words crystallize thoughts and sentiments, the thoughts that direct and the sentiments that inspire men, not only as individuals but in the mass. The lessening of centuries is stored up in words like *law* and *treaty* and *tyrant* and *liberty*. Critics often complain of the deceit which, according to them, such words practice, leading the people astray and causing them to mistake shadows for realities. But the essential point is, not that they are led astray, though this sometimes occurs, but that they are *led*: that a formed public interest in such matters, with more or less definite standards of value, exists. Without that basis no public policy would be possible at all. Perhaps it is in science that the importance of an adequate terminology is most manifest. The establishment of a new term in scientific usage makes secure some ground that has been won and prepares the way for a further advance. A term may, indeed, be harmful. *Umidum* (*the wet*) and its Greek original were nuisances for centuries, sources of the most pernicious delusions. They blocked the progress of physics with extraordinary effectiveness. But words could not do such great harm if they could not also do great good. *Mass* and *energy* and *phase* have become invaluable instruments of scientific thought.

PRINTING

With the coming of the alphabet the historic, as distinguished from the proto-historic, period begins, not merely because our knowledge of events becomes much fuller, but

because the character of the events themselves is changed. With the invention of printing the modern age begins. Once more it must be confessed that the new device was an effect as well as a cause of new social conditions. Printing met an actual need. It did not have to wait for appreciation. But the consequences of the invention may fairly be compared in magnitude with those of the invention of the alphabet.

In ancient times public discussion was almost entirely confined to the popular assembly. The slow course of philosophical discussion could indeed be run in pamphlets and treatises, though even the philosopher was in many instances more an orator than a writer. But for political discussion, for the formation of public opinion upon living issues of national policy, the spoken word was all-important. The consequence was that nationalism never existed as it exists in modern times. The state as a free agent was confined to the city and its immediate neighborhood. If citizenship was extended elsewhere, it amounted only to a special protection of the laws, together with a burden of special services to be performed.

In our time it matters comparatively little—though, of course, absolutely it matters a great deal—whether the legislative authority is exercised by one man or by many. The one man or the many are prompted in their decisions by influences that are nation-wide. Czars and kaisers have been faithful exponents of the national opinion, which indeed, made them what they were. In ancient times such a national opinion was scarcely to be found. The question has often been raised, why the federal principle had so limited an application among the Greeks. The answer probably is that they never had a sufficiently vivid sense of a solidarity of interest to unite in a coherent political or-

ganization. Fear of the Persians made the Athenian Confederacy. Fear of the Macedonians or resentment against the Spartans made the Achæan League, which is often regarded as the highest product of Greek political genius. But fear or resentment is a very insufficient principle of union. For a time it may serve to hold in check sectional jealousies and to create a certain sort of harmony. But the real aims remain sectional, and the organization is unstable and, in a protracted test, ineffective.

Printing is wholesale writing. So far as personal relations are concerned it has affected the world little. But by its means one man can readily address thousands, even though they are scattered over the whole territory in which the language is understood. Nothing in earlier times is comparable to the influence exerted by the writings of Luther, of Grotius, or of Rousseau; and while these are extraordinary and conspicuous examples, they may serve to show us what the writings of multitudes of feebler men have collectively accomplished. Rousseau never held a public office. He never exerted authority of any kind. But his *Discourse on the Origin of Inequality* and his *Social Contract* awakened or directed the aspirations of thousands—indirectly, of many millions—of men.

In the field of science the printing-press has been no less potent a factor than in that of politics. Here it has been the means of coördinating the efforts of men of similar interests throughout the world. Thanks to it, the discoveries of Galileo or Harvey could be rapidly published abroad, and in the course of a single generation the most revolutionary conceptions could gain a secure place in the system of human knowledge. Thus the results of one man's research could be made a starting-point for scores of other men, and the lost labor of endless repetition was eliminated.

The power of the press has been greatly extended through the rise of *journalism*, which may be said to date from the early years of the seventeenth century, though it has antecedents that reach back to early modern times and it becomes a social agency of the first magnitude only with the coming of the revolutionary period. A distinct branch of the literary profession has grown up, and a new reading-public has likewise grown up—a public demanding a regular service of news and comment and light literature. A regular demand is a condition of the most economical distribution, and journalism has grown prodigiously—sometimes, perhaps, at the expense of more serious writing—until it has become one of the chief unifying agencies of democracy.

The influence of the newspaper and the popular review as organs of opinion is doubtless great, though it is easily exaggerated. The journalist can not as a matter of business afford to antagonize any great number of his habitual readers. Hence his disposition is to follow rather than to lead public opinion—to make his appeal to an existing body of prejudice. Nevertheless to give public expression to a prejudice, to crystallize a widely diffused sentiment, may be no small service. But the inestimable service is the rapid spreading of information. It is journalism, with all its faults, that is the indispensable condition of modern democracy. We are so accustomed to criticizing our newspapers that we may easily forget the greatness of our debt to them. Without them our isolation would be intolerable.

Closely associated with journalism is modern advertising. This has three principal instruments:—the poster or placard to be set up in a conspicuous place, the handbill or circular, and the periodical; and the last, on account of the magnitude and cheapness of the distribution has become

especially important. Through advertising the press has become an economic factor of the first order. Markets are built up and extended with a previously unexampled rapidity, and, on the whole, with relatively less expense than would attach to any other means.

But periodical publication is not confined to newspapers and popular magazines. It embraces also the journals peculiar to every department of commerce and industry, as well as to religion, the fine arts, and science. In these varied fields its function is again to bring men together by the prompt dissemination of news and by furnishing a medium for discussion. The results of scientific research, for example, almost invariably appear first in the appropriate technical journals—unless the sheer magnitude of the work makes this unfeasible. The systematic treatises follow, perhaps after a considerable lapse of time. It is therefore not surprising that the founding of a new periodical has sometimes had an immediate and powerful effect in stimulating speculation and research.

The development of journalism has been closely dependent on the rise of the modern postal system, either for the receipt of news-material and other communications, or for the distribution of the journals themselves. This extraordinary new convenience, which has become one of the necessities of our lives, involved in its beginnings no technical invention of any sort, though it has since profited greatly by the invention and gradual improvement of the railroad, the steamboat, and the electric telegraph. It was a new economic insight that gave birth to it—the perception that a regular service, anticipating the popular demand, greatly stimulates the demand, and stimulates it the more effectually because the regularity brings down the expense to a very much lower level. This has been found true

in the transportation of goods and passengers. It is even more strikingly true in the case of messages, since their individual weight is so small. A mail coach that departs every day at a certain hour will lead hundreds of persons to write, who could not afford a special messenger, and who would not take the trouble to hold a letter ready to entrust to some one who might chance to be going in the proper direction.

THE TELEGRAPH

It is very difficult to gain a general view of what is going on all about us. Distance in time, like distance in space, hides from us an immensity of details, but it throws the larger outlines of things into relief. We know more, but also we know less, about our own generation than about the generation of Drake or of Cromwell. When a question arises as to the comparative importance of social changes now in operation and of social changes which lie definitely in the past, it is well not to be too confident in our answers. And yet it is scarcely possible to doubt that the various devices which have been invented for the instantaneous transmission of messages over great distances are bringing about a revolution in certain departments of human activity, which is comparable with the effects of the invention of the alphabet or with those of the invention of printing.

The Morse telegraph is by far the oldest of these devices, and it is therefore much easier in its case to appreciate the general significance of the impetus which it has given to progress. For one thing, it makes possible a much finer temporal coördination in certain large-scale activities, especially those of transportation. The maintenance of a railroad schedule, for example, would be almost impossible

without it. With twice the number of tracks, there would still be an intolerable amount of interference. With entirely separate tracks for freight and passenger traffic, and with a very narrow range of differences of speed for each sort of train, something might be done; but this would so multiply the expense that the railroads would be robbed of the greater part of their utility.

The part that the telegraph plays in government, and especially in war, is analogous, but even more fundamental. It introduces a strategic unity into operations which extend over hundreds or even thousands of miles. This was, indeed, the primary object in view of which the telegraph in its original (optical) form was introduced by the French revolutionary government and extended by the Directory and by Napoleon; and despite its imperfections it was a by no means negligible factor in the success of the French arms. The electric telegraph with its multitudinous lines, available day and night and in all weathers, accomplishes the same end with incomparably greater efficiency. Among the non-military functions peculiar to government, diplomacy and the police service owe most to the telegraph; but wherever subordinate officials, acting at a distance from their principals, must ask and receive immediate interpretation of the general orders they have received, or immediate and definite instructions as to their conduct in unexpected emergencies, the telegraph has a scarcely to be over-estimated value.

In commerce and finance, the telegraph has two intimately connected functions: the quick transmission and dissemination of news, and the elimination of risk. Through the daily press, as well as by means of the direct service enjoyed by the principal brokerage firms, a knowledge of the most important features of the existing financial situation

is put at the disposal of approximately every man who is in a position to profit by it. To that extent the great markets of today are world-markets. The fluidity of capital is thus enormously increased, and the cost of buying and selling is reduced to a minimum. Again, prices fluctuate, sometimes more slowly, sometimes more rapidly. In giving an order to buy or sell, which can only be executed at a later date, one of two risks can hardly be avoided. If no price-limit is set the transaction may be unprofitable; and if too cautious a limit is set the transaction may be made impossible, though under the changed conditions it may still be most desirable. Situations are constantly arising in which the risk of loss is far more serious than the chance of gain; for while the gain may greatly increase the investor's fortune, the loss may cripple him or even ruin him altogether. The cost of guarding against such hazards has in the past been very great indeed, especially in the form of foregoing or restricting the desired transaction. Now, in the exchange of money and in the sale of a great variety of securities, as well as of the principal standardized commodities, the telegraph has nearly eliminated this cost, and has thus removed from business a burden of considerable magnitude.

These services of the telegraph are fundamental, and their effects permeate every corner of the industrial world. One is tempted to believe, however, that it is in its relation to the newspaper that the telegraph is exercising its greatest influence. For it keeps the public informed not only with regard to what has happened, but with regard to what is happening. It makes of each humble reader a spectator of the universal drama. Kinglake, in a once well-known passage, describes the difference in the popular interest in the Crimean War, as compared with that in all previous

wars in which England had been engaged. The people were, so to speak, present at the conflict. The varying fortunes of the army in the field were followed from day to day and from week to week, with an abiding interest and sympathy. All this we now take for granted; and the historian of the Great War does not waste a line to tell of the awed suspense in which the world watched the checking of the Germans' last great offensive in July, 1918.

But it is not wars alone that win an audience of this kind; though it must be admitted that nothing else can arouse an interest so widespread or so intense. A murder-trial, a presidential or parliamentary election, a heavy-weight boxing-contest may occupy a prominent place in the press of two continents; and other matters will attract the attention of a nation or a country-side. Some of these things are of little consequence in themselves. They have no more direct influence on the march of events than the fortunes of a heroine of romance. What difference does it make what team wins a professional baseball championship? Yet the very fact that thousands and millions of men read the accounts of the games gives them a certain indirect importance. The newspaper at its worst takes a man out of himself, out of the narrow circle of his own affairs. It makes him, perhaps not a good citizen, but a citizen. And in the performance of this service it is very largely dependent upon the telegraph.

The point to be grasped and borne in mind is that the external interests which the telegraphic columns give to men are capable of being organized into an effective political character—something vastly superior to the sectionalism of former days or to the nationalism that contented itself with broad and empty generalities. Is it too much to predict that as alphabetic writing made democracy possible, so

the telegraph will make possible the establishment of a new and larger democracy? The ancient democracy reached its perfection in the city-state of Greece, where the life of the citizen was closely bound up with the life of the whole community. Every male citizen was a soldier and received a soldier's training, and throughout the greater part of his life he was constantly liable to be called upon for active military service. There were a multitude of offices, and election was often by lot, so that a large proportion of the men had personal experience in the work of government. Juries were much larger than ours, and jury-service was proportionately more common than with us. Above all, every citizen was a member of the legislative body. He was frequently present at discussions in which measures of greater or less importance were determined upon. Civic affairs were thus a part of his daily life, not an occasional excrescence upon more vital activities.

The very size of the modern state has made this seemingly impossible. Universal military service is, indeed, common enough, and it has its unquestionable value; but too much is not to be claimed for it as a socializing agency. The individual is lost in the huge modern war-machine, as he was not in the Athenian phalanx. For the rest, the direct contacts which the average man has with the business of government are exceedingly slight. He votes occasionally to put into office a set of men whom he does not know, and that is almost all.

It is through the telegraphic news-report that the connection is made, if it is made at all. Athens to the Athenian was a vivid present reality. He saw and felt her. America to the American is a creature of a confused imagination, an ideal construction formed out of elements derived partly from oral tradition, partly from books, but mostly from the

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newspaper. The wonder is that love of country should be so strong. But the fact remains that not only the love of country but the desire that justice shall prevail within her borders is still among the major motives of life.

The response made on the occasion of a great catastrophe is a measure of the strength of the appeal which the telegraphic report is capable of making. When San Francisco was destroyed by earthquake and fire, when Galveston was wrecked by a storm, help was despatched from the farthest corners of the country. Public spirit of the most vigorous sort exists and is ready to be awakened. That it shows itself in benevolence more clearly than in justice is due to defective organization. We have not realized in our political constitutions the possibilities that the telegraph affords.

The telegraph is not only producing a better nationalism. It is also producing a new internationalism, though here again benevolence outruns justice. Humanity is far indeed from having forms in which justice can be adequately realized. International law, eked out as it may be by the occasional appointment of commissions for the settlement of "non-justiciable" disputes, is still far from constituting a system of equity. But the evidences of a greater international charity are in themselves encouraging; for the growth of benevolence is the chief condition for the advancement of justice.

Of the influence of the telephone and of the new methods of wireless communication it is hazardous to speak, and for our present purpose unnecessary. Enough has been said to establish the general principle, that improvement in the means of communication is a factor of prime importance in social evolution; and there is no need to indulge in vain prophecies. There would be more reason to dwell upon the

influence of steam-transportation, considered merely in relation to the postal service and to travel; but we have chosen to omit this, and to leave it to the reader to supply, if he will, the application of the general principle to this case.

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CHAPTER XIV

SOCIAL ORGANIZATION

It remains for us to complete the program announced at the beginning of Chapter XII, by adding a general account of the evolutionary influence of social organization. The subject is of great extent, and we shall have to confine ourselves for the most part to principles of wide application. We shall study, first, the influence of social organization generally upon the various forms of social intercourse, especially upon the communication of feelings and sentiments; and, secondly, the part played by morality and by law, municipal and international.

THE COMMUNICATION OF IDEAS AND FEELINGS

We have already seen how certain forms of social organization serve as the necessary basis of the coöperation which makes up one great side of the intercourse between men. The union of efforts for the attainment of a common satisfaction is only very exceptionally between individuals as such. The individuals are determined in their action by family connections, by the usages of markets and the current level of market prices, by the rules of trade-unions and the "ethical" standards of professions, etc.

As we have also noted in passing, the like is true with regard to the other side of social intercourse, communication. The mere fact that men are within hailing distance and that they use a common tongue may, to be sure, lead

them to address each other and to exchange some meaningless expressions of good-will, which may even develop into a protracted conversation. We hate isolation. Even a brief and superficial contact with our kind is pleasant, and talk is entertaining. But most talk, even if it has no purpose or utility beyond entertainment, is confined to associates between whom more or less permanent relations have been established. Generally, too, there is a further utility, and this is connected with the social relations between the parties. It is essentially bound up with the business of living, and follows the same channels that social life in general takes. Where a social barrier exists between parts of a population, as between the whites and blacks in an American city, it is sometimes amazing how far reports can spread on one side of the division, which the other side never has a chance to hear; until, perhaps, in the especially intimate relation between some old master and servant the information leaks through.

All organizations require meetings for discussion, either of the whole membership or of representatives; and though these meetings are often informal they may also be regular institutions. Furthermore, there are among almost all peoples associations of persons for the special purpose of communication, that is to say, of teaching, discussion, and mutual enlightenment. Much teaching, to be sure, occurs within the family. The apprenticeship in the useful arts, as well as the initiation into the standards of good sense and propriety, takes place under the father and mother. But the collective activities of the tribe or the totemic group, especially war and religious ritual, require a training which generally exceeds what the parents can give; and even in other matters the larger society not seldom assumes the duty of examining, if not of teaching; and that is performed

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by its officers. The invention and popularization of writing gave birth to the elementary school. With the rise of science came the necessity of new organizations for teaching and criticism and the coördination of research. At first, to be sure, as in Egypt and Babylonia, the priestly brotherhoods sufficed; and in Greece the Pythagorean order was originally a religious society, the object of which was the ritualistic purification of its members. But the other early philosophical "schools" were guilds, which, so far as we know, had no other purpose than the satisfaction of intellectual curiosity. In the time of the Sophists, philosophy began to reach a larger public; and then semi-public institutions soon arose, which were the forerunners of our modern universities and learned societies.

Publication, too, has its well-defined social instrumentalities. The bard himself, trudging from hall to hall, may be his own publisher; but he counts upon a social custom which makes his performance an appropriate after-dinner entertainment. Or he goes, like Empedocles, to some great public festival, if custom will give him an opportunity to recite his verses there. But generally under civilized conditions publication is a business in itself, like any other. It has its special organization, its channels of trade, its sources of supply, and its duly educated purchasing public.

If the communication of ideas is plainly limited and determined by the social organization, this is even more evidently true of the communication of feelings. It is one thing to make men understand. It is another thing to modify their emotional attitudes. For this, sympathy is necessary; and the influence of sympathy is in the main confined to the limits of social groups.

It would be idle to deny the existence of a certain degree of sympathy which naturally arises between man and man,

independently of any special relation between them. But a social bond of any kind greatly increases the sympathetic tendency—sometimes out of all proportion to what an external observer would regard as the closeness of the connection. We not only feel for our associates; we feel with them. We appropriate to ourselves their defeats and their triumphs as if they were our own, so that sympathy grows into an enlarged selfishness.

Sympathy may be checked by other strong emotion, such as anger, jealousy, or fear—especially by superstitious fear of evil contagion. But generally there is another contributing condition; namely, a social barrier between the parties. Without this, cruelty is common enough, but consistent, unfeeling brutality is rare. We are brutal to those of another race or tribe or station in life. We are brutal to criminals and to enemies in war. We are brutal to slaves and employees, unless a new social bond arises to give them a share in our concerns. The ideal conditions for brutality are given, when we have to do with men whom we regard as essentially our inferiors and subjects, but whose obedience is unwilling and must be compelled by force.

So far as the intensity of sympathetic feeling is concerned, it is not certain that man shows any advance upon the primates in general. They are affectionate creatures, capable of passionate attachments and quickly responsive to one another's cries and gestures. If we had no other evidence, the absorbing love which the young gorilla or chimpanzee conceives for his human master is strongly indicative of his normal relations to his own natural companions in the forest.

But if the intensity of sympathy has not increased in man, its delicacy and emotional range have certainly increased. Philosophers have often written as if the difference between

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man and beast were merely an intellectual difference—a prejudice that is crystallized in the familiar definition: Man is a rational animal. But the emotional difference, if inferior, is certainly essential; and the expression of the emotions in man is only less marked in its advance upon all that we can observe in even the highest animals, than speech itself. The human countenance, the hand and arm, the whole body with its infinitely varying attitudes and movements, and the wealth of modulated tones which the voice possesses—no beast or bird has anything to compare with these. Now emotions are expressed that they may be responded to; and though the response is by no means always sympathetic—as when anger gives rise to fear or to a reciprocal anger—in highly social animals the sympathetic type of response is easily the most important. Grant that man is *homo sapiens*, *homo faber*, or call him by any other name that may best express his powers of intellectual analysis and intellectually controlled manipulation of things. He is also *homo amicus*, the man of sympathetic understanding.

It must, of course, be recognized that man's intellectual proficiency has had important effects upon his emotional life, and particularly upon the development of those complexes of emotional tendencies which are more properly called "sentiments." A sentiment of personal affection, for example, is no one particular feeling or emotion. It is a readiness to experience the greatest variety of emotions, cheerful and sad, according to the situation or condition in which the loved one is for the time being, and especially his relation or attitude toward oneself. In this sense, the animals too of course have sentiments. But man's heightened powers of imagination and reason have given to his emotions new objects about which to organize themselves:

ideal objects and the symbols and representatives which embody them; abstractions, general aims, standards of beauty and propriety. Now as our sensations in our waking hours are seldom or never bare sensations, so our emotions are not bare emotions. Our response is not to the immediate situation as such, but to a long past which is incorporated in our developed sentiments. And, in particular, our sympathies follow the lines which our sentiments dictate. Where these oppose we generally remain cold. Where they are ready to add their reinforcement, we are easily excited to respond.

But there is a further characteristic of human sympathy, which more particularly concerns us here, namely the multiplicity of the social channels through which it runs.

Sympathy is by its very nature exclusive. It is "clannish." The Indian tribe, which with all its resources protects and provides for every one of its members, has little concern for the outsider. It is this chill indifference that deceives the superficial observer. He reports that the "savage" is destitute of all feelings of humanity. But the truth of the matter has been well expressed in the dictum, that a whole tribe may perish from starvation, a single Indian never. As a matter of fact, if it were not for mutual charity and helpfulness, primitive man, under the difficult conditions which he must frequently endure, could not long survive. There never was a more mistaken guess than that which pictured the natural state of mankind as a war of every man with every man. Within the tribal circle personal quarrels do of course spring up, and sometimes persist as deep-seated grudges; indeed, outside that circle contacts are generally too few to give rise to any personal animosity. But quarrels arise even in the best regulated of modern families; and, on the whole, the life of the savage is one of peace

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and good feeling, except where the enemies of his people are concerned.

However, even among the most primitive men, the tribal union is far from being the only bond of sympathy. There is always a family union of some kind as well, that is to say, a union of persons living together in particular intimacy, based upon the relation of marriage and parenthood. It brings its members into daily and hourly contact, with constant opportunities for mutual helpfulness. Though, as a rule, it does not long keep its integrity, but with the growth of the children is broken up and scattered, the continued influence of the old associations persists and generally finds expression in some larger, if looser, social organization. The totemic group, based on common descent in the paternal or maternal lines, is widely found, and is often of far greater moment than the family itself, and sometimes of at least equal moment with the tribe. Blood-revenge and the religious cult are commonly among its functions. Neighborhood is often a powerful bond, sometimes not to be distinguished from those of the tribe or the family, but often distinct. The bond of a common occupation is important in various ways, often serving, for example, to join together the men of a tribe to the exclusion of the women, and *vice versa*. Much of the feeling of opposition between the sexes may easily be traced, not to any fundamental antagonism, but to difference in occupation. Other social groups, which are widely found, are special religious societies, military societies, bachelor-groups, age-groups, groups of those who have won some special distinction, nobilities, castes, etc.

It was formerly supposed that the structure of savage society was everywhere very simple. The nineteenth century was well advanced before white observers became

distinctly aware of the totemic groups which play so important a role in the life of many American Indians. It is now well known that in all peoples, except where the meagerness and extreme scattering of the population prevent, social relations exist in considerable variety. It is not merely that a single kind of relationship, such as connection by blood or marriage, gives rise to a complicated tribal pattern. As a rule, relationships of several different kinds, ranging from personal friendship to membership in a privileged religious brotherhood, are found together.

However, with the progress of civilization, the variety of social contacts has, on the whole, pretty steadily increased. This is not to deny that in civilized lands many men are confined by abject poverty, by routine, or by physical isolation to lives which, socially considered, are starved in comparison with those of primitive men. But others are far more fortunate; and when the social life as a whole is considered, the comparison leaves no room for question.

But it is not in the mere multiplicity of contacts alone that civilized society is superior to uncivilized. It is in the greater freedom of association. (Here again there are important exceptions to be recognized, such as are exemplified by slavery and serfdom.) The relations of the savage to his fellow-tribesmen are in great part fixed at his birth. He belongs, let us say, to his mother's totem, and her brothers will stand ready to avenge any attack made upon his life. But his father is the main support of the family; and it is he that takes him on the hunt and teaches him how to stalk and shoot. His father's kinsmen take a certain affectionate interest in him; and he owes them a conventional deference; and, as he grows older, he gives them regular presents which are fixed by the degree of the relationship. Marriage establishes a new set of rigidly

conventional relationships, not only with the wife herself but with her family. However, the freedom of choice in marriage is often so restricted, that the actual marriage only intensifies relationships that have existed since birth. The bride, let us say, is the man's mother's brother's daughter, and this marks her out as his appropriate mate. Independent agreements of many kinds do, of course occur, and there is little that directly prohibits them. But life is so far provided for by custom and tradition that the possible scope for independent agreement is greatly reduced.

This, then, is a second remarkable characteristic of human sympathy, which we have to add to its superior range and delicacy: the manifoldness and variety of its social channels.

There is an appearance of circularity in the statement, first, that a society is constituted by communication and coöperation, and, secondly, that communication and coöperation follow the lines laid down by social relationships. But there is no real circle. Almost all intercourse takes place under conditions which previous intercourse has established. Prevailing habits, conceptions, and sentiments provide the channels for new social activities. Speech is here the perfect illustration. We speak with the expectation of being understood; and that this expectation may be justified, millions of men have spoken before us, using the same words and grammatical constructions. It is facts of this kind that determine the continuity of a society's existence. The social group is made what it is, not by mere physical propinquity—though that is usually an important condition—but by a certain nearness of mind and heart. To this we must add the impress which social

activity has left upon the material environment: cities, highways, cultivated fields, tools and instruments, etc.

In society, almost as little as in the organic world, is *generatio aequivoca* to be found. The first contact between races, which for thousands of years have had neither direct nor indirect communication with each other, is very instructive in this regard. Of mutual understanding and appreciation there is almost none. The white man's ship is to the savage a huge bird; the white man himself is commonly regarded as a dead man who has returned to life; his simplest acts are looked upon as magical processes. And the white man's misunderstanding of the savage is just as great. The good missionary cares for a sick native and restores him to health, and then is astounded to find that his late patient, far from showing any gratitude, lays claim to large additional favors and is loudly indignant when they are refused. Any intercourse that takes place is of the most superficial kind. There is a little barter, a little charity—and slavery, pillage, and wholesale murder. Any deeper intimacy takes time to develop—when a prompt extermination of the savage does not put a stop to all possible development.

Two men enter a boat, which is furnished with two large oars; and at once each seizes an oar and they begin to row, regulating their strokes, the one by the other. Coöperation could hardly be simpler. But consider the conditions under which it takes place. That they have a common destination may be a coincidence. But that they are able to recognize their common purpose; that they perceive at a glance what the boat is and what its oars are for; that they know how to row, and are willing to row in order to reach their destination; that the boat itself, with its oars, has been

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prepared for such use—these are not mere coincidences. They are products of previous social life which enter as determining conditions into the new life.

That ideas may be conveyed, some ideas must already be held by both parties. Even pointing may not suffice to call attention to an object, if there is not some understanding of the sort of object that is to be attended to. Anyone who has ever tried to teach a dog a trick knows how exceedingly difficult it is to get the animal to notice details that to us are as prominent as can be; indeed it is sometimes a mystery what the animal *does* see. Something of the same difficulty is constantly felt in trying to teach a savage or a child, or even a civilized adult who belongs to a very different tradition. The larger the fund of common notions and principles and common acquaintance with things, the easier it is to extend it. But this is to say that, as a rule, the communication of ideas is only possible on the basis of previous communication.

Similarly, unless there is a substantial agreement in men's sentiments, the feelings of one have little chance of communication to the rest. There may be pity for hunger or pain, or a responsive smile for youthful gayety, but not much more. Our affective life runs in deep grooves, which earlier feelings have worn. It is these, far more than any native endowment, that make up what we call "character," whether personal or national.

This point is important enough to call for illustration. A trivial example may not be the least instructive. Many years ago a crew from an American university entered an English eight-oar rowing contest. In one of the races the English boat against which they were matched had a slight accident in starting. The Americans nevertheless proceeded to row over the course, thus winning a formal victory.

This action provoked the most contemptuous criticism in England, not only on the part of the spectators but in the press. For years afterwards it was cited as an example of the low level of American sportsmanship. Meanwhile from the American point of view it was the English who were showing poor sporting sense. The Cornell rowers had not felt free to act differently. If the case had been altered, and they had lost the race in a similar way, they would have blamed nothing except their own carelessness. Accidents should be prevented, and to make allowance for them takes the edge off the sport. It is like giving back a move at chess—no real chess-player would think of offering or accepting so dubious a favor.

A community of sentiments facilitates sympathy; difference in sentiments inhibits it. The common sentiment is thus a mark of social union. It is also a consequence of social union. For the sentiments which each of us feels are only in a slight degree peculiar to us as individuals. They are a part of our social heritage, like our general ideas and the terms by which these are expressed. Their development is a social process. Is it right to take advantage of a slip of your opponent? Sometimes, no doubt; but when, and when not? We may be perfectly sincere in our answers to such questions; but we are not original. We have not answered them for ourselves. No more have we as individuals worked out our own tastes in art, our own standards in morals and politics, our own religious aspirations. We take them over from the social environment, or, rather, we grow up into them under the influence of social pressure. Constitutional peculiarities assuredly determine how much we acquire in this direction, how much in that; but it is almost never safe to ascribe to them anything decidedly new. For sentiments, in order to grow, need en-

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couragement. Even our eccentricities are the eccentricities of schools and parties and coteries. Thus the community of sentiments which makes intercourse possible is itself a product of previous intercourse; and, as in the case of ideas, the social is born only of the social.

MORALITY

There are certain sentiments which have more directly to do with the conditions of social intercourse of all kinds, and especially with the traits of character which fit men for social life; namely, the moral sentiments. To have these in common is in the most important sense to be fitted to have dealings with one another. To have radically unlike moral sentiments is to remain forever strangers.

Morality was compared by Leslie Stephen to the structural qualities of a continuous tissue out of which the various social organs are formed. The figure is as open to criticism as such figures usually are, but it has been useful none the less; for it depicts very vividly the relation of the moral sentiments to society as a whole. These sentiments provide the general psychological basis for the coöperation which takes so many particular forms. Stephen cited as an illustration of his idea the fusion of nationalities in the United States. Men of different former political allegiance, differing also in language, in creed, in literary and artistic traditions, have fused into a single people. Why? Because beneath all these differences they were of one social tissue—their morality was substantially the same. The illustration is much better than the biological analogy itself; for, as one might say, it holds even where it breaks down. Where the moral tradition is noticeably different, the fusion proceeds slowly. The fears with respect to the

unassimilability of certain European "races," which, before the adoption of severe restrictions, were coming into this country in great numbers, were ridiculous from the point of view of race, but were to some extent justified on this other ground.

The moral standards prevalent among any people may be said to represent a solution of a problem—a problem that has been solved only gradually, and for the most part without consciousness of its having been put: How shall men live together in peace? Hobbes's famous deduction of the "laws of nature," as he calls them, is precisely along this line; and despite his intellectualistic dogmatism the attempt is not uninformative. Of course, as a matter of fact, men have always lived together, even before they were men. The "state of nature" is a myth. That man is naturally a social animal is indisputable. But his history has been a succession of changes, the slowest of which was rapid in comparison with the rate of modification in his structure or his instincts. The problem of social unity has been imposed almost as gradually as it has been solved. Man has lived in the midst of repeated maladjustments which organic evolution could not remedy. Only social modifications could suffice. Men living huddled in caves had strains upon their good nature, of which their arboreal ancestors had been blissfully ignorant. Men caring for flocks and herds, upon the well-being of which their life depends, are in a radically different situation from the primitive hunters, who, like wolves, will kill, if they can, every animal of a herd, regardless of the amount of their present needs, and trusting to the morrow to bring a fresh supply. There are causes of quarrel for the former, which, for the latter, are simply non-existent. Accordingly the history of morality represents a series of solutions of a

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problem which has repeatedly changed its data—or, rather not one series but many different series.

A man to do the work of a man must be prepared to take cheerfully and as a matter of course the risks that men in general take. Otherwise he is unfit for their common enterprises. However, the particular standards of courage, as of the other moral virtues, differ with the sort of life that is lived. The savage warrior, brave as he may be, can not understand the way in which disciplined troops expose themselves to fire. His own scheme of war comprises the raid, the ambush, the surprise-attack—not the pitched battle; and accordingly the standard of military courage to which he is held is very different from ours. The white man invariably finds the savage lazy, and is almost invariably wrong. Any tendency to laziness is, under the general conditions of primitive life, pretty effectively discouraged. Even apart from the necessities of the situation, the universal contempt of men and women alike is enough to make the most slothfully inclined bestir himself. But it is true that the savage will not, and indeed can not, do regular daily work. For him the existence of the peasant following the plow or swinging the scythe day after day, from morning till night, would be an unendurable torture, a life worse than death.

The morality of a people is thus definitely related to its mode of life. It is an outgrowth of the social evolution as a whole. But at the same time it has a force of persistence of its own, and thus becomes an all-important condition of future evolution. Some types of morality are far more favorable to progress than others; some are extremely unfavorable. And it is a fact of the greatest importance, that, as civilization has advanced, the changes in morality

have in great part been of a nature to encourage a further advance.

In the first place, there has been, with enlarging social contacts of every kind, a widening of the bounds of benevolence and of duty; and this in turn has made easier the establishment of further connections. The primitive tribesman, though in many instances, where his fears and suspicions have been laid at rest, he has received strangers hospitably, or, if they were in distress, has treated them with the utmost kindness, does not, as a rule, regard charity to the stranger as meritorious, and he accords him no rights whatsoever. But this rule has exceptions. Peaceful intertribal relations are found at all culture levels; and even between hereditary enemies and in time of actual warfare, there are almost always some privileged individuals who are free to pass as envoys from side to side. The growth of these exceptions into the attitude represented by modern humanitarianism and modern civil and criminal law makes an impressive history. Relations of hospitality have played an important part, the foreigner, who had no rights in his own person, being protected by his host. A most interesting phase is that which Shakespeare with characteristic legal as well as ethical acumen has portrayed in *The Merchant of Venice*; for though the law of that play is largely fanciful it is based upon a sound knowledge of principles. Several points force themselves upon the attention: the habitual conduct of Antonio, that ultra-respectable merchant, toward Shylock, an alien in blood and faith; the motivation of Shylock's revenge, which is tribal as well as personal; the court's insistence that Shylock must be given his strict legal due or the commercial interests of Venice might suffer; the vain appeal of Portia to a larger humanity,

—"Then must the Jew be merciful." But we should also observe the nature of those statutes by which Shylock is finally checked and caught. The *Jew* who sheds a *Christian's* blood, the *foreigner* who plots against life of any *citizen*, commits a capital offense. If Antonio had been in Shylock's place, the law would have had no hold upon him. The slow spread of human charity through the ages, in its ideal as well as in its practical aspects, is presented as volumes could not do it.

In the second place, morality has become more self-conscious, that is to say, more clearly conscious of its implicit aims. This makes it more flexible in response to conditions which call for modification of these aims. The requirement which imposes itself as absolute must stand or fall as a whole, or, if it change, must change with the imperceptibleness with which, in the course of centuries, the pronunciation of a language changes. This is the general inferiority of unintelligence to intelligence. Modification which is at once prompt and apposite is the peculiar function of the latter.

Primitive morality has very little rational account to give of itself. For one thing, the motives which produce conformity are largely external: fear of destructive magic or of the hostility of offended spirits, or fear of the measures which the fellow-tribesmen may take to remove magical pollution or placate the wrath of the superior powers. Thus, though the least enlightened of men appreciate the difference between intentional and unintentional injury, their moral standards very commonly ignore this difference. One of the clearest signs of advancing civilization is the public customary regulations that favor the acceptance of compensation for unintentional homicide and the insistence upon revenge for murder. The gods are less progressive,

for they have their fixed conventional attributes and functions; and the magical sanctions are altogether blind. For this reason, if for no other, the recognition of the intention has the effect of internalizing moral values. Right is felt to be right in itself, independently of the superior powers. However, in the instances best known to us, these powers themselves have ultimately become moralized, so that even the divine sanctions are felt to be grounded in the nature of moral good and evil themselves.

But the internalized moral values may be no less absolute than the primitive external values. They may be even more unyielding. The angry gods can be placated by sacrifice, and magical pollution yields to counter-magic; but the absolute standard of right stands inflexible. And when conflicts between standards arise, leading inevitably to changes, the changes are not necessarily of an adaptive nature. More or less arbitrary distinctions are introduced, and the root of the matter remains untouched.

The further step of connecting the whole mass of moral standards with a rational end or purpose has, however, among all civilized peoples been taken, not only by philosophers or religious teachers, but also, in some measure, by the common consciousness. Disputes with reference to the end of moral conduct have been the staple of the schools; but, in one way or another, the general welfare has been widely recognized as a determining factor. As a consequence of this step, the moral laws have gained greatly in plasticity; for, when a requirement is referred to an end that is to be realized, it must admit of modification in accordance with changing conditions. Not but what there has been, and still is, an energetic conservatism. There remains even today a wide-spread conviction that the requirements of the moral law are absolute and unconditional,

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and that it is an impiety even to ask for a justification of them. *Fiat justitia, pereat mundus* remains the classical expression of this sentiment. By far the most influential exposition of the liberal view, at least so far as the Western world is concerned, is contained in the gospel account of the teachings of Jesus of Nazareth. His conflicts with the Pharisees, with especial reference to the matter of sabbath observance, form an interesting feature of the New Testament narrative. The challenging question, "Is it right to do good or to do evil on the sabbath day?" is among his most characteristic utterances.

Even when morality is most intelligent and hence most adaptable, it continually rehardens into set formulae. The spirit of charity is extolled, but charity is to be manifested in certain conventional ways.

Go teach the orphan boy to read,
Go teach the orphan girl to sew.

In this respect moral values are like all others. In a closely analogous way the romantic spirit in art, despite its craving for new and significant forms, invariably relapses into a new conventionalism. It would be idle to regret this. In the conventionalized form what has been gained can be most readily spread abroad and transmitted. We are creatures of rule and routine; and so long as conditions remain fairly constant, the established rule and the familiar routine serve us well. It is only when under changed conditions the old reactions no longer run smoothly that intelligent insight is called for. There is this further reason for the conventionality of moral standards: that the ideals of human welfare, to which they are relative, are themselves conventional. Let us desire with all our hearts to do what we can for our

fellowmen; let us be as watchful as possible for the effects that spring from our behavior; still the question remains, what is good for them? And this we can, for the most part, answer only by repeating an accepted answer: money, health, education, social position, civil liberty, religious faith and devotion. At the best we see through a clouded glass.

Nevertheless it is clear that on the whole morality has become more intelligent and flexible, and has thus contributed to the greater flexibility of social institutions generally. The new rule retains some sense of the reasons that produced it. It stands in a logical connection with other rules and other reasons. Only a long period of stagnation could altogether deprive it of this character; and that has not for many centuries fallen to the lot of the bearers of our culture.

In the third place, since the end of the Middle Ages, and more particularly since the height of the eighteenth-century enlightenment, Western morality has been distinguished by a greatly increased emphasis upon the amelioration of social conditions. Men of science, inventors and engineers, educators and statesmen, and the great moral leaders have been inspired by this aim. The magnitude of the change of sentiment which has taken place is perhaps most clearly to be seen in the transformation of Christianity, which, reflecting the moral aspirations of its followers, is now scarcely to be called an other-worldly religion. The ascent to a better world is more and more ignored, as men learn to hope and strive for a radical betterment of this one. There is even a growing tendency to make of progress—individual, but above all social—a supreme moral ideal, to which the particular goals that may be realized are merely incidental, having no value in them-

selves but only as stages in a movement. From this point of view a final heaven would be a second death.

It would be a serious mistake indeed to confuse intention and accomplishment, especially where the betterment of the fundamental conditions of living are concerned. The inventor of dynamite hoped that the possession of high explosives would quickly bring about the end of war! Nevertheless the fixing of interest upon an end to be attained is a most important favorable condition for attaining it. The possibility of error is always present; but even errors, when attentively observed, may amply repay us in instruction for the loss of time and effort which they have occasioned. In social matters our scientific insight is still so limited, that practical achievement must in most cases depend largely upon guess-work and the gradual correction of mistakes; but the value of a steady good-will is surely not for that reason to be decried.

LAW

Between law and morals there is no clear line of demarcation. As Hobbes put it, the laws of nature and the civil laws include each other; for it is a precept of morality to obey the statutes, and an essential part of every system of statutes is devoted to enforcing or supporting the moral law. We should now be more inclined to insist upon the exceptions to this agreeable description of affairs, but its substantial truth is manifest. Even an evil-minded ruler—as Hobbes points out—desires his subjects to live in a decent and orderly fashion, and he is not likely to give intentional encouragement to anyone's vices outside the circle of his own companions. And if this is true of particular commands, it is true in an eminent degree of laws in the proper sense

of the term. For laws are in their nature universal; and while one may, under stress of temptation, give commands for particular wrong acts, it is harder to bring oneself to lay down a general rule, that such action shall for the future be regarded not as wrong but as permissible or even obligatory.

Law stands to custom in a relation analogous to that in which intelligent morality stands to customary morality. A law implies a legislature; and this, whether it consist of a single man or of a whole people, is essentially deliberative. Laws are made for reasons which seem good and sufficient in view of the interest of a certain body of persons, who in this most vital sense constitute the state. The whole system of law thus represents the result of a continuous conscious effort to modify custom in such ways as to adapt it more perfectly to social needs.

The place which legislation occupies in the civilized world is one of the most striking features of the higher stages of culture. The lower stages are ruled by immemorial custom on the one hand and by special decisions and decrees on the other hand; while the notion that a new standard of rights and duties may be instituted hardly enters into consciousness. It is not that customary standards do not change. The commands of powerful and respected chiefs may become precedents from which their successors will not presume to depart. Decisions by which old rules of acting are applied to novel emergencies may have almost the effect of new legislation. But the legislative purpose and the very conception of legislative power are absent.

The rise of legislation means the attaining by the social consciousness of something of the same power of conceptual reconstruction which is involved in the beginnings of science. All the host of unwise laws that have been passed, all the

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host of misguided theories that have been published to the world, should not blind us to the portentous significance of the advance. Man's "privilege of absurdity" is enormously extended. His errors are magnified through the unrestrained power of logical universality. The history of early law, like the history of early philosophy, reads like a chronicle of human perversity. And yet through generation after generation the scientific reconstruction of phenomena, the legal reconstruction of social relations, has proceeded; and when a large retrospect is taken the total progress dwarfs the transient deviations almost to nothingness.

As primitive standards of conduct are not based on rational principles, so they are immune to rational criticism, no matter how harmful they may actually be. In this they are like superstitions in general. Consider, for example, the wide-spread regulation which compels men to go into battle fasting. This is certainly not based on repeated experience of successful results. The motives which have inspired it are entirely of the magical order. It might be thought that contrary experiences would be sufficient to exhibit its folly—that men fighting on an empty stomach and beaten would soon suspect their emptiness of being the cause of the defeat, and that some more daring spirits, who broke the taboo, would find the benefits of the breakfast so evident that they would be confirmed in their rebellion and would soon have the whole tribe following their example. But that is not what happens. The feeling of emptiness, or even of faintness, which the warrior may experience, is taken for granted; it is discounted in advance. The tribe always fights on an empty stomach, and under such conditions it has often been victorious. Why ascribe a particular defeat to this cause? There are many other

causes to which it can more plausibly be attributed—above all, the magic practiced by the enemy. As for the man who disregards the taboo, any immediate physical benefit which he experiences is nothing in comparison with the weight of apprehension that comes upon him as he recalls the dreadful thing that he has done. If anything could bring him to harm it would be that. If, nevertheless, both he and his companions escape, that means simply that their side had good “medicine” to spare, or that some one among the enemy had been equally careless of the mystic powers. Besides, the evil influence may be strangely persistent; and it can be truthfully affirmed that few men have broken a taboo without having some notable piece of ill-luck—sooner or later.

When the rule of conduct is conceived as the expression of a superhuman being's will, it is equally impervious to logic. Any confirming experience is awesomely impressive. Any contrary experience is easily explained away. When misfortune comes, almost every one is sure to have offended some god in some way or other, and a simple procedure of casting lots is sufficient to find a culprit. After the repulse of Joshua's forces at Ai, such an inquiry was held, we are told, and the lot fell upon a certain Achan, who confessed to having taken a little of the “accursed” spoil of Jericho. If some equally guilty person escapes, he is far from proclaiming the fact, we may be sure; and, while he blesses his luck for the moment, he remains in fear of what the future may bring. For gods, like earthly kings and chiefs, have long memories; and just when a man begins to think himself safe, they loose upon him the vengeance which they have been silently preparing.

The equivocal character of the earliest legislation, which we meet with at the beginning of the historical period, ap-

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pears in several ways. In the first place, it is rather a codification of custom than an enactment of new laws. However, it is not possible to compile a code without being forced into some supplementation and harmonization; and, indeed, a common motive for the whole undertaking is the harmonization of the customs of a number of tribes which have entered into a larger political union. (In much the same fashion, a poet like Hesiod, who endeavors to bring into a single whole a mass of religious beliefs, which have hitherto been full of local differences or even closely attached to local cults, can not for all his piety avoid contributing something of his own invention.) Where distinctly new provisions are included, these are sometimes—as in the case of the Deuteronomic code—represented as being revivals of ancient regulations which have fallen into disuse and oblivion. In the second place, this early legislation almost always claims a divine inspiration and in some degree a divine sanction. It does not claim respect as a product of merely human wisdom and foresight. Only by investing itself with the authority of the traditional religion can it hope to rival the prestige of the immemorial folkways.

But even in this crude transitional form, law soon acquires the new feature which radically differentiates it from the older rule of custom. It is deliberately designed with a view to the welfare of the society. The legislation purports to be not merely a change but a change for the better. The deity whose will it registers is no tyrant, but a patron, a protector, or even an adviser. He is wise and good, and the supreme recommendation of the law is not merely that he has commanded it, but that it embodies his superhuman wisdom and his abiding good-will.

These early laws are transitional in the following respect also: that they are conceived to be incapable of further amendment. Even if they should be neglected and forgotten they would lose none of their binding force. The punishment for disobedience would fall with undiminished severity. Moreover, it is out of the question that through the deliberations of even the ablest men the laws should be made better. Their divine source assures them against both invalidation and improvement.

The full emergence of law, as the higher civilization knows it, requires its enfranchisement from religious influences. In its institutional form this is what we know as the "separation of church and state." But deeper than this is the separation, or liberation, of reason from religious scruples, and especially the shuffling-off of the conceptions on which the religious view of human conduct had been framed. Vestiges of them still linger, to be sure. The form of the oath, and particularly the use of the Bible as a fetich in swearing, may serve as a familiar example. But little reflection is needed to show that the real solemnity of the oath and the real guilt of perjury are due to the function of testimony in determining the judicial decision; and it is this function that the legal penalties for perjury have in view, not the sacrilege as such. The witness may be a complete infidel. His oath will bind him none the less for that.

There are many laws that have never been enacted; but these stand in essentially the same relation to the legislative power as those for which a definite origin can be assigned. As the familiar legal fiction has it, the common law equally with the statutes represents the will of the sovereign; for the very silence of the sovereign sufficiently indicates his

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intention that to this extent the customary procedures shall still be followed. In more literal terms, law is essentially *open to amendment*; and it is so because, in however mistaken a way, it is expected to be reasonable.

The reasonableness of law makes it a system—a cosmos, as it were—organized upon a basis of clearly articulated concepts; and the most significant feature of legal history is the evolution of these concepts. An example of peculiar interest is the conception of *crime*; for this is as characteristic of civilized justice as the conception of permanent matter is of the civilized outlook upon nature. The criminal act is an offense, not so much against the persons who may have been injured by it, as against the state. (In the analogous religious conception of *sin*, the offense is similarly against God: “Against thee, thee only, have I sinned, and done this evil in thy sight.” But the conception of crime is wholly profane. Divinely ordained standards and sanctions are foreign to it.) The individual may, of course, defend himself against criminal aggression. But when the crime has been accomplished, he has no right either to pardon or to revenge. He cannot even accept restitution or compensation for his injuries on condition of his refusing to testify against the criminal—even though, as a result, his affairs are brought to irremediable ruin. No deep insight is required to see that this conception is an inseparable member of a great organization of ideas, a logical construction; and that however poorly it may seem to meet the exigencies of this or that particular case, it has been essential to the maintenance of equitable relations generally, and of the public tranquillity which depends upon the expectation of equity.

The system of law develops in two ways: legislation and judicial interpretation. The latter is a curious process of

dialectic, which is not without a certain analogy to the process by which customary standards are developed through the decisions of tribal councils. In the deliberations of the court, as in those of the council, an accepted rule of conduct has to be applied to a special case; and the special case not seldom shows marked peculiarities. With the utmost sincerity and good-will, it may be far from obvious how the application is to be made. Something must be stretched; something must be curtailed; some analogy or fanciful resemblance must be followed, or again some more formal induction. The body of judicial precedents, like the traditions of the sachems, grows through the very endeavor to preserve it as unchanged as possible. But there is this grave difference: that the application of the law is in its spirit and intent—if not always in its actuality—a definitely logical procedure. It is true that courts are not wholly superior to the prejudices of class and party, and also that they are of necessity strongly influenced in their interpretations by the prevailing conception of the public welfare which the law is intended to promote. Nevertheless in the eyes of the jurist the law of the land is a system of reason. It spreads itself out before him as clearly articulated in all its parts as a mathematical science. If there is the semblance of a conflict, it is his business to establish a distinction by which the integrity of the system is preserved. If he succeeds in this, the system has at that point undergone a development; and through an endless multitude of similar distinctions the whole body of law becomes more and more far-reaching and more and more finely articulated. The history of constitutional law in the United States presents in a comparatively limited compass an unsurpassable example of this process.

In relation to the body of law thus constituted, the

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process of legislation appears as an artificial and extraneous interference. But the interference is ordinarily slight. Specific provisions are altered; but the great underlying conceptions, which have been built up through the centuries, remain unaffected, for the legislator can not think in other terms. And after the new law has been enacted, the process of judicial interpretation goes on as before, until the old and the new are so woven together that no cleavage between them remains visible. The whole is once more a system of reason. Thus it lies within the province of legislation to create a new type of property-owning corporation; to prescribe minutely how such a body may be formed or dissolved, how it shall be directed, how its responsibilities are related to those of the individuals who have an interest in it, etc. But the task remains of bringing these provisions into coherent relations with one another and with the whole body of law which defines the rights of property and the various types of responsibility; and in the accomplishment of this task the fundamental principles maintain a continuous integrity.

The part which legislative activity plays is none the less essential, though it might be argued that the possibility of such action is more important than the actuality. The power to revise even the fundamental law of the constitution is necessary in order to keep in vigor a certain loyalty to the institutions of one's country. Nothing is more dangerous than the tyranny of the dead hand, for it provokes the disaffection which it can not control. However, without actual revision the power would soon become a nullity. But in truth the very logical explicitness of law makes occasional amendment necessary. There are limits to the flexibility of judicial dialectic. With every desire to recognize the requirements of a new age, judges are after all bound by the

clauses which they have to interpret. They may infuse a new spirit into the old language, but the letter remains to cramp the spirit. The only adequate method of bringing the law into harmony with a developed public sentiment is openly to recognize the discrepancies that have arisen, and deliberately and formally to correct them.

Good legislation unsettles as little as possible of the foundation of custom and tradition upon which it rests. Suppose even that, as a sequel to a political revolution in which powers essential to the constitutional machinery have been destroyed, it becomes necessary to adopt a new constitution. The uniform testimony of history is that under such circumstances the less that is changed the better—and, above all, that the less in the way of inventive ingenuity is displayed by the constitution-makers, the safer it is for posterity. They can create little. Their task is to secure expression for the actual political forces in the nation; and since those forces already have a more or less definite form, their problem is to carry through that form—to extend the imperfect pattern to a complete design. Where invention is necessary, the hazards are at best unavoidably great.

Law is only enforceable when it expresses, or at least does not contravene, the real will of the community. When instead of law we find only the edicts of a despot, it is noteworthy that these are extremely limited in their scope—almost the whole of life is left to be governed by the local customs of the people. That a true legislative power can go farther depends upon the fact that its acts simply give definite shape and direction to the force of public opinion; and its limits are reached when this ceases to be a fact. Beyond that point coercion may be severe to the point of extreme cruelty without accomplishing its purpose. The law cannot set officers to spy upon us all, or even upon a

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large minority of us. If an energetic public conscience governs the vast majority, if we respect the law as reasonable and well-advised, then the exceptional individuals who rebel against it can with a fair degree of success be kept under control.

THE RELATION OF LAW TO SOCIAL INTERCOURSE

We have already had occasion to notice that curious misconception of society which makes of the modern state an organic unity comparable to the particular animal organism. Intercourse of all kinds flows too freely over our national boundaries for this to be a fair comparison. A glance at an American railroad map shows the Michigan Central and the Grand Trunk—a Canadian line—running almost side by side from Buffalo, through Canada and Michigan, down to Chicago. It is a picture of the internationalism in the midst of which we live.

Nevertheless there is a certain measure of truth in the nationalistic conception—more, perhaps than there ought to be. There is a sense in which the state is indeed the society of societies, all-comprehensive and all supporting. For it is to the state that we owe justice, and upon the maintenance of justice all our undertakings depend. While trains of the two railroads are passing through Canada, they are subject to Canadian law and protected by the Canadian police-power. When they cross over into Michigan, there is no sudden change in the appearance of things; but it is now by virtue of the authorization and the protection of the state of Michigan and the United States of America that they run. Normally we feel the surrounding presence of the laws as little as we do the presence of the atmosphere; but their immediate importance is scarcely less.

For the maintenance of our legal rights we have the support of an organized force, wielded by a quasi-impersonal authority. In primitive society no comparable force exists. Rights are in general protected by public opinion, and also by the constant readiness of the possessor, assisted if necessary by his friends and relatives, to assert and defend them. Even the council of a typical village community, when a dispute is brought before it, decides merely what is in accordance with custom, not what any man shall be compelled to do. There is no sheriff to enforce its decision. The society of our small boys, in which a very tolerable order is maintained, is not dissimilar. Ordinarily the rights of person and property are respected. The bully who attacks a smaller boy may or may not be restrained by others—that depends upon their personal interest in the matter—but he makes himself disliked. As a matter of fact, the little fellow who is ready to stand his ground to the best of his ability is seldom interfered with. It is not worth one's while to whip him.

We have a government, good or bad; and bad as it may be we cannot get along without it. Anarchy is for us a synonym for intolerable disorder and violence. The power of the state, which in the last resort rests upon our wills, is none the less set over against them. Custom is no one's choice. It is simply a fact. The law, which is made and unmade, must be systematically enforced.

The constant dependence of our social activities upon law makes it necessary that law, like morality but far more closely, should mould itself to changing social conditions. Thus economic conditions may necessitate profound changes in the law, even when a conscious resistance is for a time made by the conservatively-minded legislature; and as these changes are worked out in one country they are speedily

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borrowed in others where similar conditions prevail. Moral ideals, as they develop, react powerfully on the law in all its branches, inasmuch as a changed morality makes men profoundly discontented with conditions which they have previously taken for granted as natural and inevitable.

But, as we observed in the case of morality, the development of law is a cause, as well as an effect, of other social change. The law is a great educator and guide. In adapting itself to the pressure of moral or economic forces, it may at the same time give them a new and unpredictable direction.

The rise of states has in itself contributed in a material degree to social evolution generally. By introducing the conception of individual responsibility, not only for crime and damage but for requisite services to the state itself, it has assisted in the breaking-up of the older family-groups and contributed to the greater freedom of association. By establishing courts with rational rules of evidence for the determination of facts, it has greatly increased the general security against fraud as well as violence. The state has proved itself to be not only efficient in a military sense, but possessed of a considerable capacity for permanently consolidating the tribes which it unites; so that while the despotic empire falls readily in pieces, and, in the extreme case of the military despotisms of black Africa, scarcely outlives the conqueror, the more typical state has great cohesiveness. On the whole, therefore, despite the long history of wars, the state has made for internal peace and security. Perhaps its greatest service has been in connection with the law of contracts, which has made it possible for useful undertakings of every kind to be prosecuted in a harmonious and systematic way.

Again, as in the case of morality, some legal systems are far more favorable to progress than others; and one of the features of most signal importance in the history of civilization has been the growing ascendancy in modern legislation of certain principles which in this respect have been especially fortunate.

(1) In the first place, there is the principle of toleration. There has always been the toleration that springs from indifference, and in this respect the advance has simply been that we have learned to be indifferent to some matters which our forefathers took more seriously. Thus we tolerate sectarian differences, largely because we attribute little importance to them in comparison with the more general tenets of religion. But, as this very example suggests, the principle of toleration goes further. It embraces beliefs and practices which the great majority regard as distinctly evil, but which we conceive it would be distinctly more evil to attempt to crush out. Thus we tolerate atheism and the publication of atheistical literature, though most of us believe that to lose faith in God is to be deprived of one of the supports of righteousness. We are convinced, first, that repressive measures would lead to widespread hypocrisy, which would be more dangerous than open unbelief; and also that such measures would be sure to involve some men, who, while technically atheists according to the tests prescribed by the law, were in fuller sympathy with religion than many who remained untouched. But the conviction goes deeper still. If atheism were to be proscribed as a pernicious doctrine, other dangerous and pernicious doctrines would also inevitably be condemned; and we are not willing to trust any body of men to draw up a code distinguishing between good and evil doctrines. Finally, we have learned to think of freedom of opinion and its expres-

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sion as an essential good in itself—something that adds a grace to life which can ill be spared.

The importance of toleration as a condition of free communication and hence of intellectual activity and progress is too manifest to call for elaborate comment. Italy is a lesson in itself. During the whole period of the Renaissance, Italian leadership in science was indisputable. The condemnation of Galileo marks the extinction of a glory and the passing of the leadership to other lands.

At the present time, in the more enlightened countries, the only serious limit to freedom of speech and of the press consists of the prohibition of language which is regarded as inciting to crime—especially revolutionary violence—or as obscene, and hence, like indecent exposure of the person, a direct menace to sexual morality. Even these limitations have their regrettable inconveniences.

(2) No less important is the abolition of hereditary disabilities, especially in the form of slavery. The most conspicuous difference between the civilized societies of ancient and modern times lies here. The revival of slavery in the American possessions of European powers was a deeply regrettable episode, but it has had relatively little effect upon the great centers of culture.

That slavery is a formidable obstacle to industrial progress is clear enough from the historical record; and the reasons too are obvious. Slavery does, it is true, provide a simple mode of coöperation, and in that respect has undoubtedly been useful. It even makes possible a division of labor between men who are skilled in different lines; and it has been conjectured that the oldest division of labor, aside from that between the sexes, may have been between the tasks of slaves. But wherever efficient coöperation re-

quires individual interest and initiative, slavery is unsuccessful. There is no wide division of responsibility; even the overseer is expected to command only the performance of routine tasks. There is therefore no occasion and no motive for invention. On the other hand, when the supply of slaves is plentiful, they can be used in simple, straightforward operations, such as those of agriculture, to the exclusion of free labor and the consequent general weakening of the social structure. Morally the effects of slavery are even more serious. To the extent to which the slave is restrained from accumulating property, he is necessarily improvident; and, being without genuine responsibility, he is almost necessarily dishonest. The slave's marital relations are insecure; and the use of female slaves as concubines extends the corruption of manners to the slave-holding class. Finally, the cruelty with which the law permits slaves to be treated has a general brutalizing effect upon both them and their masters. For all these reasons modern Europe has been exceedingly fortunate. With a system of slavery, the great political and economic progress which has occurred would surely have been impossible; and the intellectual progress has been so bound up with economic tendencies, that it too must have been very greatly curtailed.

(3) The abolition of hereditary privileges must also be noted in this connection. Of these, inherited wealth is the only one of importance which remains; and in most countries the decay of primogeniture has reduced the menace from this source. Aristocracy has its uses. Men need leaders; and the young aristocrat receives a valuable training in leadership, as the commoner does in subserviency. But aristocracy also narrows the choice of leaders, and sets

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a heavy handicap upon ability that shows itself in the lower orders. Aristocracy is essentially conservative. Its whole natural emphasis is upon the preservation of the goods which have been won in the past and handed down to their present bearers. It thus fosters a very strong sense of responsibility. The noble may, or may not, feel a responsibility for the common herd; but he has at any rate a duty to the traditions of his own class. Such conservatism, however, easily becomes excessive, and on the whole the tendency of aristocratic institutions is to block every forward movement. The backwardness of aristocratic morals is characteristic. By this it is not meant that as individuals the members of the nobility are worse than other men, but that their moral ideals as such are prone to be barbaric. The persistence of the duel is an illustration of this tendency; another may be found in the cult—not merely the practice—of drunkenness, gambling, and adultery. It must be remembered also, that an aristocratic constitution of society has its effects, not only on the morality of the upper classes, but also on the morality of those beneath. If the aristocrat is upheld by his traditions of *noblesse*, the commoner is no less degraded by the consciousness of his inferiority. Finally, the cleavage between classes is an obstacle to the growth of the sentiment of humanity. On the whole, therefore, the rise of democracy is favorable to social evolution.

This conclusion is frequently contested. It is said that in a democracy there is a leveling tendency that presses down unusual ability. The evidence is found in two directions: first, in the immense sums of money that are spent upon the education of the masses—money which might have been left in the pockets of the tax-payers or devoted to the

training of the competent few—together with the lack of special attention by common-school authorities to the special needs of unusual children; and secondly, in the voter's jealousy of distinction and his preference for men of his own mediocre stamp. It is pretty certain, however, that common-school education, measured by whatever standard, is worth to the tax-payers all that it costs them; and there is little reason to suppose that any considerable part of this cost would under any circumstances have gone to higher education and the encouragement of research. The neglect of the unusual child was a fault of school-organization which has nothing to do with democracy, and which in the United States, for example, has in recent years been rapidly corrected. And if the vulgar herd are jealous of distinguished ability, this is not more serious than the contempt for it which springs from pride of birth. As a matter of fact, however, the people are very much inclined to be hero-worshippers. The absence of hereditary privileges is compatible with any amount of respect for personal distinction, and is, on the whole rather favorable to it than otherwise. If it be objected that the people can not appreciate real ability—that their political hero is a demagogue, as their favorite novelist is trash—we must reply that the ability of the demagogue is real, and is, indeed, essential to a high order of statesmanship. The plain fact is that democracy puts an extraordinary demand upon its leaders. They must be demagogues, though they may be more. Much the same is true of popular success in literature. It is not the faults of the best-seller that make it sell—myriads of books with the same faults fall flat. It is its real merits, merits that are compatible with the highest arts of the writer, and without which the greatest eminence is impossible.

INTERNATIONAL LAW

The status of international law is anomalous. It is neither law nor custom. The nations have no common court with a general authorization to expound and apply it, and no common power to execute it; and, what is of deeper significance, they have no legislature by which it may be formally amended. Even the establishment of a universal league "with teeth" would not touch the root of the matter, unless somewhere a power of legislation resided. The expected codification of international law by the existing League of Nations is perhaps a beginning in this direction.

On the other hand, international law has not the unquestioned authority of custom. Custom, as we have said, is simply a fact, recognized and accepted as such with practical unanimity. International law is in great part a modern growth, and many important provisions are still far from being universally accepted. It received its first noteworthy impetus from the widespread reaction against the horrors of the religious wars of the sixteenth and seventeenth centuries. When Grotius wrote *On the Laws of War and Peace*, those laws scarcely existed save in his own enthusiasm. But the need of them was deeply felt, and the Thirty Years' War impressed the need even more deeply. Grotius was accepted as an authority because some authority was necessary, and no other was available. The process, irregular as it was, thus had something of the nature of legislation. It was self-conscious, even if not strictly deliberative. A similar character attaches to that pulling and hauling between the powers, through which the further development has taken place.

It has sometimes been held that international law is rather of the nature of morality than of law, and it is true that

it is closely allied to the reflective morality of the higher civilization. But to merge the two notions is altogether misleading. In the first place, the content of international law is in great part of a totally non-ethical character—the three-mile limit, for example. And, in the second place, it is recognized as law by the courts of all civilized countries. Momentous decisions are determined by it. Some interesting examples are to be found in the records of our Supreme Court, which has decided according to international law various questions at issue between different states of the Union. What is law for such purposes is certainly not mere morality.

There are three recognized divisions of international law. The law of peace is a simple and restricted doctrine. It defines the mutual limitations of authority of independent states. The law of war bulks far larger, and has received a much greater share of popular interest. That it has done much to restrict and moderate the sufferings caused by war is hardly to be called in question—even today; but it has nothing to do with the prevention of war, only coming into operation when war breaks out, and in conflicts of great magnitude or bitterness it is not well observed. The law of neutrality is capable of greater usefulness; but its enforcement depends in practice on the willingness of neutrals to intervene in a conflict if need be to protect their rights. Despite its relative simplicity, the law of peace is really the most important of the three divisions, governing as it does the smooth adjustment of the relations between states in normal times.

What has the rise of this new system of law meant for civilization? In an earlier chapter we have considered the importance of war as a factor in social evolution. In the light of the discussions of the intervening chapters it should

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seem almost superfluous to consider the importance of the international polity which has been erected to put restraints upon war, to avoid causes of quarrel, and to encourage peaceful intercourse. If our general survey of principles has proved anything, it is that whatever promotes a larger and fuller interchange of goods, spiritual and material, makes for the advancement of culture. A few concluding words will, however, not be out of place.

A reasonable assurance of peace is almost necessary to the carrying-on of modern commerce and to the industrial production which depends on a world-wide market. It is true that large fortunes are made in time of war, and there is a popular belief that great wars are welcomed by the "money-power"; but this is a gross error. Financial interests have, indeed, prompted governments to aggressive action in cases where it was known (or believed) that victory would be easily and quickly won; but in a prolonged contest between great powers the destruction of property is so great, the disruption of economic relations is so serious, that few men capable of holding places of responsibility in the world could desire it. The very possibility that war may in no distant future arise puts a tax upon productive enterprise, which in extreme cases is oppressive or even crushing.

There is another aspect of the matter which is more easily overlooked, but which is deserving of careful attention. The part which intertribal, or international, communication plays in social evolution is admittedly very great, not only as a condition of immediate coöperation, but as a condition of the development of ideas and the improvement of the arts. The great bulk of the culture which any people possesses has been borrowed by it, although it has generally suffered some change in the process of as-

simulation. A culture-map of the Old or the New World owes its principal contours, not to local invention, but to migration and imitation. Furthermore, when a great original advance takes place, the stimulus to it generally comes, in part at least, from without; indeed the hasty student is tempted to attribute altogether too much to foreign influences. Thus Greece owed the beginnings of her geometry to an imperfect contact with Egyptian learning; but it was the Greeks and not the Egyptians who carried forward the development of the science. So the science of the Renaissance owed essential elements to the Arabian and Byzantine learning which it soon surpassed. It is the shock of new ideas from foreign sources that has again and again roused men from their "dogmatic slumbers." When isolation, from whatever cause, long continues, the possibility of settling down to a condition of immovable stability is increased.

Now communication takes place even across the barriers of hereditary enmity; but that it is obstructed and retarded by such barriers hardly needs demonstration. The costs of war have not been counted till the hates and fears that it leaves behind are included in the sum. It is not simply that these increase the danger of fresh wars. There is a subtle but persistent influence of another kind. Travel in the enemy country is made distasteful; and to a real, though lesser, degree so is the reading of its literature. The general public and even the intellectual élite are prejudiced against any expression of sentiment, however generous and sincere, which emanates from what is regarded as a permanently hostile source. Trade-relations are at best lacking in cordiality, and here too an avenue of communication is obstructed. Even music is affected—if not so far as the accepted classics are concerned, then at

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least in the reception that is given to new works and to visiting artists. Science and philosophy also, though they may pretend to absolute impartiality in their judgments, are not immune to the contagion of jealousy and malice.

The question, so far as there really is a question to discuss, is not as to the importance of peace in relation to human progress, nor as to the absolute value of our present organization for world-peace—since this is all we have. It is how that organization may be improved.

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CHAPTER XV

CONCLUSION

WE have now taken up for consideration, one after another, the principal conditions governing the evolution of culture. In so doing we have made no special effort to unite the various chapters into a single comprehensive view of the subject. And yet, despite our inattention, such a view has been shaping itself for us. The interconnection of the facts is so deep and so extensive, that it is only necessary to set them down in some sort of order for them to form of themselves a systematic whole.

There are, first, the relatively stable and unmodifiable conditions laid down in advance by the geographical environment and by the hereditary characteristics of the human stock. These are the foundation, so to speak, of the whole superstructure. Everything that man does or becomes is limited by them; but for that very reason they cannot afford a sufficient explanation of his historical development. Nature and human nature take on new causal values as they are brought within the scope of man's expanding intelligence and are made to minister to increasing and ramifying needs.

Among the gifts of nature, of which men have learned to avail themselves, are the tool materials: wood, stone, and the metals. It is by means of tools that man has impressed his will upon the world, at the same time forming himself; and the character of the tools, the skill developed in their

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use, and the fineness and variety of the products of human labor, together with the modes and standards of living connected therewith, are all dependent upon appreciation of the qualities of the materials through which his powers are exerted. Hence the great divisions of human history, down to the age of steel, are appropriately marked by the names of tool-materials. A new conquest of nature and a revolution in the processes and organization of industry have been initiated by the rapid rise of the machine. This has vastly increased man's strength by subjecting to his will enormous external sources of power. In some respects, though by no means in all, the results have been analogous to those of the improvement of tools. Especially noteworthy are the new means of communication and of travel and transportation which the machine has provided.

The development of the tool and of the machine is, however, only a partial and external aspect of a transformation in man himself: the development of thought. This is not a mere increase of knowledge, though that is included. It is a transformation of the thought-processes and of the type of control which they exert over behavior. The general direction of the change is anticipated in the contrast between man as such and the highest of the other animals. It is most clearly exhibited in the rise of science. But it shows itself in all departments of human activity; for example, in industry and commerce, in religion, and in law.

But social activity is intercourse, and it develops through intercourse. Hence the forms and instrumentalities of communication and exchange are fundamental conditions for the whole evolution of culture. To facilitate exchange is to stimulate the division of labor and the specialization of proficiency. To improve the means of communication is to liberate and enrich the human mind. And the structure

of society itself, which in the main determines the effective contacts between individuals and directs not only the spread of ideas but the flow of sympathy as well, remains a never to be neglected factor in every transformation.

Finally, social evolution has an important characteristic, for which organic evolution has no analogue. Changes in one species have no tendency to induce parallel changes in any other; but changes in one society initiate a most potent tendency to parallel changes in other societies with which the first is in contact. Thus a movement initiated among one people extends in the course of time to many others; and of the culture possessed by any people, by far the greater part is of foreign origin. Isolation makes for arrest of development. On the other hand, the appropriation of foreign ideas and practices is itself a process of development, and often initiates developmental tendencies which extend much further.

With this outline before us, it is not difficult to see why one or another theorist has insisted that some one of these factors of social evolution is alone of determining significance—how Comte, for example, should have emphasized the development of thought, and Durkheim the internal organization of the social group. The abundance of reciprocal causal relations makes such a procedure easy and attractive, as well as most misleading. If the making and use of tools has sharpened man's wits and trained his judgment, every tool and every process of manufacture bears the impress of conceptual thought. If the importation of foreign ideas and practices is necessary to prevent stagnation, the advance of culture brings about a multiplication of points of contact between peoples. The great systems of transportation which the recent industrial era has produced have reacted powerfully

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upon all the operations of industry; and in conjunction with the telegraph they have brought far-extending territories into a close political unity. How the rise of a reflective morality and of municipal and international law have affected modern culture as a whole, we have lately considered. The great danger that attaches to speculation along these lines is a premature satisfaction with one-sided views.

In applying general sociological theories to the explanation of particular phenomena, one is never justified in closing his eyes to possible modifying conditions. A machine might readily be devised to perform correctly complex operations of formal logic; and a man can perform such operations very much as the machine would; but in reasoning about society to proceed mechanically is to make serious error inevitable. We have here to deal, not with eternal species, but with shifting types; and our premises are at best true "generally speaking." Herbert Spencer thought that if we made our social science relate to an ideal society, we might work out an exact deductive system. We have lost faith in the value of such conceptions; but certain it is that in relation to actual society we have no prospect of obtaining the abstract universality at which he aimed.

In order that we may justly appreciate the value of the results which we have reached, we must take account of their limitations. Consider, for example, the rise of alphabetic writing. We have remarked upon the magnitude of its influence upon commerce and government, science and literature. It was epoch-making in the strictest sense of the term. But it would be wrong to infer that every department of literature shared in the advance. To one great department—narrative poetry—the alphabet has

contributed nothing. Centuries before the introduction of the alphabet into Greece, the epic had reached a perfection which still marks one of the ultimate attainments of humanity. The varied music of the versification, the vividness of the narrative, the tragic intensity of the great moments, the convincing truth of the character-portrayal—all these are above praise; and to poets and critics of later ages Homer has been one of the inspired. Writing has done much for the lyric and everything for the drama, but it has brought forth nothing to compare with the *Iliad*. Now there is no great mystery in this. We understand that with the introduction of writing the conditions that had given the epic its hold upon men were deeply disturbed. It was ideally suited to the needs of the professional rhapsodist and his auditors. But when the memory was lightened of its great load, and literature came into the possession of the general public, the supremacy of the epic was broken.

Thus even in the midst of one of the greatest forward movements of humanity, the advance is not universal; and general principles alone will not tell us where the retardation or the retreat will occur. Only a knowledge of the special conditions underlying each culture-trait will suffice; and this knowledge we seldom possess in such fullness as to warrant any confident expectations. We are wise after the event.

In this respect the theory of social evolution is not in an essentially inferior position as compared with the theory of organic evolution. There too we are wise after the event. Even in the case of man, the most earnestly studied of animals, the attempts at prediction which are hazarded border on the comic. Some local degeneration appears to be going on—in the little toe, for example, and in the wis-

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dom teeth; and we may, if we please, indulge our imagination with thoughts of a future toothless man, walking on hoofs that represent the present big toes. As a matter of fact the tendencies in question may very well have run their course already; we have no convincing evidence to the contrary. And so far as any really developmental tendencies are concerned, no one seriously pretends to know anything. Theories of the over-man belong to the province of poetry, not to that of science.

The sociologist is, on the whole, more favorably situated than the biologist for the study of current tendencies; for the processes which engage his attention are comparatively rapid, and they can be examined in direct conjunction with the surrounding conditions. Changes of considerable magnitude take place even within the limits of a normal lifetime; and if our eyes are open to the general character of the forces that are likely to be operative in such cases, we can sometimes form reasonable conjectures as to the developments of the near future. More than this is not to be claimed.

It is not to be inferred that evolutionary theories, and in particular the theory of social evolution, are of only slight significance. If they help us to order and organize masses of facts, and afford us a certain guidance in the accumulation of further experience, they are well worth any pains they may have cost, even though they are far from affording a basis for prophecy.

The great value of abstract and general theories lies not so much in the specific deductions that can be drawn from them, as in the fact that they provide us with a point of view from which the phenomena can be studied. They are a guide to attention, without which our observations would be desultory and unprofitable. We can not validly argue

that because intertribal contacts are a primary condition of progress, therefore all tariff barriers are pernicious or that a universal language would swiftly bring on the millennium. But the general theory may well make us suspicious of the alleged value of import taxes, and put us on the watch to observe the many-sided waste which they occasion; and it may lead us to lay aside our prejudices long enough to consider seriously the possible benefits to science and to industry of an international secondary language, which though it lacked the appeal to emotion which only the "natural" languages can possess, might better than any natural language give clear and exact expression to facts. In neither case is the result of the enquiry predetermined. It may be that under existing conditions the import taxes are worth all they cost the country and the world; and the project of a universal language may be wholly impracticable. The general theory settles much less than it unsettles; but it awakens and directs the more specific thought by which the settlement is reached.

The theory of social evolution is of service in another way, even more indirect but of profound importance.

In discussing the rise of modern science we had occasion to note the great increase of power which came to it as a result of the elimination of religious and magical modes of thinking. So long as the development and nutrition of the organism were attributed to the influence of an indwelling soul, or the daily revolution of the stars was explained by a continual fresh outpouring of divine energy, the pathway of progress was effectually blocked. The "new philosophy" of Descartes was in various respects quite as deeply in error as the old philosophy of the scholastics which it replaced; but it was on the side of the future in this at

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least, that it admitted no explanation of physical or biological phenomena in terms that retained the impress of a religious or magical origin.

But human conduct remained an anomaly. To explain it an essentially magical soul—a man within the man—was still required. This soul was simple, an organism with no anatomy. It was endowed with a transcendent freedom, so that each of its acts was a new miracle of creation. If it was good, or if it was evil, no proper explanation could be found for this except its own choice or the original decree or special intervention of divine providence.

The effects of supernaturalism in psychology and in the social sciences are as serious as in physics. To explain the phenomena of perception and reasoning in terms of a simple soul and its transcendent faculties is as stultifying as it is to explain nutrition and reproduction in an analogous fashion. Above all, to regard moral responsibility as attaching only to acts which spring from an original and utterly unfathomable creative power, puts an effectual stop to any rational investigation of the subject.

The principle of personal responsibility for wrong-doing had its rise with the beginnings of the historic period. It is a characteristic expression of the greater individualism and the greater logical clarity of thought that distinguish the more advanced peoples. As the prophet Ezekiel puts it, "The soul that sinneth, *it* shall die"; and again, "Every man shall die for his own sin." In its time this marked one of the greatest forward movements ever taken by humanity. At the present time the path of progress lies in the opposite direction. Social responsibility, not only for poverty and for unhygienic conditions of living, but for crime, is the great lesson to be learned. A superstitious conception of the soul is making it exceedingly hard for us to learn

it. For the assumption of social responsibility is felt to be a denial of the moral guilt of the individual. Just as our fathers were perplexed in the effort to reconcile the creative omnipotence of God with the free will of the sinner, so we are perplexed by the apparent contradiction between the condemnation of the criminal and the admission of our own share in the making of the criminal.

It is true that, as early as the middle of the eighteenth century, an earnest effort was made to free science from this remnant of supernaturalism. But the way that was taken was not wholly fortunate. The phenomena of human thought and feeling were looked upon as natural, but they were regarded as constituting a second natural world alongside of the world of physical phenomena. The magical characteristics of the soul were dropped, but with them were given up all unity of mental life except what was provided by such external modes of connection as the association of ideas. The result was, first, that while some understanding of the lower mental processes was gained, very little was accomplished for the interpretation of the higher mental processes, such as reasoning and moral judgment; and, secondly, that the practical concepts which governed men's social and political relations with one another remained almost wholly unaffected. In the last half-century analytical psychology has been greatly advanced, mainly through the introduction of experimental methods; but its relation to law and morals is as distant as ever.

If we are to deal rationally with man and society, the soul must be brought back into the realm of nature, not as a tyrant but as a rightful denizen. To do this is not to surrender to materialism; it is to maintain a real spiritualism. To make the soul a thing apart, while admitting the universal reign of law in the physical world—that is truly

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to make of it a thing of naught. But to recognize that the intelligence and will of man have their place in the system of natural phenomena is to claim for them a causal efficacy not inferior, certainly, to that of physical and chemical agencies. And at the same time it is to conceive the possibility of a mastery of man over himself, as far superior, perhaps, to our present schemes of education and government, as our engineering is to the windmills of the Middle Ages.

How this revolution—the completion of the Renaissance—is to be brought about, we can not here consider. Different inquirers are looking in very different directions for its coming. Our American behaviorism, so diversely interpreted, so bitterly attacked, and so warmly defended, is the most interesting and not the least promising of the suggestions that have been made. What we have to note is the part played by theories of evolution, and especially the theory of social evolution, in this whole thought-movement.

The work of Darwin, like the work of Copernicus, indicated clearly the illusoriness of a long accepted division in nature. Copernicus invalidated the distinction between the terrestrial and the celestial worlds; for the earth, as a planet, had its place in the heavens. Darwin invalidated the distinction between the human race and the animal kingdom; for man, as an offshoot from the primate stock, belongs to the animal kingdom. Nevertheless from one point of view Darwin's work appears to have been only half done, for the simple reason that almost nothing of what is most characteristic of man falls within the scope of biological studies. It is not man, as organic evolution has made him, who pursues the arts of war and peace. It is man as social evolution has remade him. Hence, while the effect of Darwin's discoveries was extraordinarily great,

they failed to produce in the general public which he reached a practical conviction of the naturalness of human affairs.

This, as August Comte had already perceived, could only be accomplished through the study of social evolution; and it was with this end in view that he elaborated his famous theory of the "three stages"—the theological, metaphysical, and positivistic stages which mark men's changing attitude toward the world. That theory, as he stated it, will not hold; but the larger purpose was most assuredly sound. Only through the study of the rise of human institutions can we free ourselves from superstition with regard to man, and attain, in our dealings with one another, to the full dignity of reason.

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